



Melick-Tully  
& Associates

*A Division of GZA*



## **STORMWATER INVESTIGATION**

### **Proposed Quick Chek Food Store and Restaurant**

**West Windsor, Mercer County, New Jersey  
ER/UDC West Windsor, LLC**

August 30, 2021

File No. 26.0092434.00

#### **PREPARED FOR:**

ER/UDC West Windsor, LLC

P. O. Box 391

Williston, Vermont 05493

#### **Melick-Tully & Associates, A Division of GZA**

117 Canal Road

South Bound Brook, NJ 08880

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GZA has 32 Offices Nationwide

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& Associates

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GEOTECHNICAL

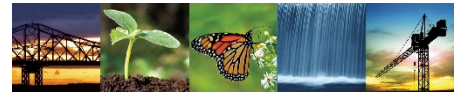
ENVIRONMENTAL

ECOLOGICAL

WATER

CONSTRUCTION  
MANAGEMENT

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August 30, 2021  
File No. 26.P000237.22

ER/UDC West Windsor, LLC  
P. O. Box 391  
Williston, Vermont 05493

Attention: Mr. Larry Harder

**Report**  
**Stormwater Investigation**  
**Proposed Quick Chek Food Store and Restaurant**  
**West Windsor, Mercer County, New Jersey**  
**ER/UDC West Windsor, LLC**

**Introduction**

This report presents the results of a stormwater investigation completed by Melick-Tully & Associates, a Division of GZA GeoEnvironmental, Inc. (MTA) at the site of a proposed Quick Chek food store and a proposed restaurant which may be constructed in West Windsor, Mercer County, New Jersey. The site is located adjacent to and west of Southfield Road between Princeton-Hightstown Road and McGetrick Lane, as shown on the attached Site Location Map, Plate 1. Our work was performed in general conformance with our proposal dated June 30, 2021.

**Proposed Construction**

A site layout plan provided to us indicates that the development would consist of two facilities and associated site improvements. The eastern half of the property would be developed by a Quick Chek food store approximately 5,869 square feet in plan area with a finish floor elevation of +97.00 feet. A canopy with eight fuel dispensers would be located to the north of the food store area and four underground storage tanks would be



located north of the canopy. On-site paved parking and roadway areas would be constructed to service the proposed facility.

Adjacent to and west of the Quick Chek development, a restaurant approximately 4,541 square feet in plan area with a drive-thru would be constructed with a finish floor elevation of +96.50 feet. The building would be located on the west parcel with a drive-thru lane south and east of the building. On-site paved parking and roadway areas would be constructed north and west of the proposed restaurant.

On-site stormwater management facilities are currently planned. These currently include seven above-ground stormwater management basins, seven areas of porous asphalt pavement below proposed car parking areas on both developments, and porous concrete pavements adjacent to the two structures.

### **Purpose and Scope of Work**

The purpose of our services was to:

- 1) explore the subsurface soil and groundwater conditions via test pits and borings in accessible portions of the proposed development;
- 2) collect tube samples of the soil layers encountered from all proposed test pit locations for laboratory tube permeameter permeability testing;
- 3) perform cased borehole permeability testing at selected locations; and
- 4) prepare a brief summary report of our findings for use by the basin designer in their evaluation of the stormwater improvements.

To accomplish these purposes, a subsurface exploration program consisting of 28 supervised test pit excavations and two test borings were performed at the site in the locations of proposed stormwater management facilities shown on Bohler's preliminary site plan dated April 27, 2021. The test pits were advanced using a track-mounted excavator (CAT 308) and extended to depths of 12 to 13 feet below existing



surface grades. The test borings were advanced using a geoprobe with continuous core sampling and extended to depths of 10 feet below grade. A cased borehole permeability test was performed adjacent to each boring following completion at depths of 2 and 8.5 feet below grade. The locations of the explorations are shown in relation to proposed site features on the Plot Plan, Plate 2.

All field work was performed under the direct technical supervision of a geotechnical engineer from MTA. Our representative located the explorations in the field, supervised the soil sampling operations, maintained continuous logs of the explorations as the work proceeded, and obtained samples of the materials encountered in the explorations for identification purposes. We also obtained relatively undisturbed tube samples from the test pits for laboratory tube permeameter permeability testing and performed cased borehole permeability testing adjacent to each boring.

Detailed descriptions of the encountered subsurface conditions are described on the Test Pit Logs, Plates 3-1 through 3-28, and Test Boring Logs, Plates 4-1 and 4-2. The soils were visually classified in general accordance with the procedures of the United States Department of Agriculture Soil Classification System (USDA) described on Plate 5.

All soil samples were brought to our office, and selected samples were subjected to laboratory grain-size and tube permeameter permeability testing. The results of the gradation testing are presented on Plates 6-1 and 6-2, while the permeability test results are presented on Plate 7.

The following discussion of our findings are subject to the Limitations attached as an Appendix to this report.



## Site Conditions

Surface Features: The site contains five separate lots (Lots 2 through 6). Lot 2 consists of a one-story masonry building with a basement and a paved parking lot to the west. Lot 3 consists of a two-story frame building and a detached frame garage. Lot 4 consists of a two-story frame building and a detached one-story garage structure. Lot 5 consists of a one-story frame building with a detached frame garage. And Lot 6 consists of a one-story frame building to the west and previously consisted of a one-story frame building to the southeast, which had already been demolished at the time of our investigation. Grass lawns with trees, bushes, and driveways cover the surface between the buildings. Princeton-Hightstown Road borders the property to the north, Southfield Road to the east, and McGetrick Lane to the south.

Topographic information shown on the plans provided to us indicates that the ground surface elevations slope downward from approximately Elevation +96 feet in the northeast to approximately Elevation +93 in the western and southern portions of the site.

Subsurface Conditions: Approximately 2 inches of asphalt pavement was encountered at the surface in Test Pits 16 and 19. Fill was encountered at the surface in Test Pits 10 and 11. The remaining test pits were performed in grass lawn areas where approximately 3 to 26 inches of topsoil was encountered. Fill was also encountered below the surface materials in Test Pits 16, 17, 21, and 22. Fill thicknesses varied from about 1.3 feet to 5.8 feet and typically consisted of sandy loam, sandy clay loam, and clay soils. The surface and fill materials were underlain by interlayered sand, loamy sand, sandy loam, sandy clay loam, clay loam, and clay soils. Generally, clayey soils were encountered near the surface while sandier soils were encountered at deeper depths.



Groundwater seepage was observed in 17 of the test pits (Test Pits 1 through 16, and 20) at depths of approximate 9.5 to 13 feet below grade, corresponding approximately to elevations ranging from +81 feet to +84.5 feet. In addition, groundwater levels were obtained in five wells installed on August 12, 2021 for an environmental baseline on the proposed Quick Chek property. Depths to groundwater varied from approximately 7.7 to 10.8 feet in the wells, corresponding approximately to elevations ranging from +84.2 feet and +85.6 feet. Mottling, which is indicative of seasonally saturated conditions, was observed in the test pits at depths ranging from 7 to 108 inches below grade. In addition, the sidewalls in some of the test pits collapsed during excavation within a few feet of the observed groundwater seepage levels, suggesting groundwater levels in those test pits are likely near sidewall caving depths.

### **Permeability Test Results**

Laboratory tube permeameter permeability tests were performed on tube samples of the subsoils collected below the proposed stormwater management facilities in each test pit. The permeability tests indicate that the deeper sandy subsoils (sand, loamy sand, and sandy loam) generally exhibited permeabilities of 1 inch per hour to greater than 20 inches per hour, while the surficial silty and clayey soils (sandy clay loam, loam, clay loam, and clay) generally exhibited permeability of less than 1 inch per hour, and often less than 0.06 inches per hour. The laboratory tube permeability tests are summarized on Plate 7.

Cased borehole permeability testing was performed below proposed porous concrete pavement areas around the proposed Quick Chek building. Field permeability tests were performed in Boring 1 at a depth of 3.3 feet below grade and in Boring 2 at a depth of 8.5 feet below grade. The field permeability tests indicate that the silty clay soils in Boring 1 and loamy sand soils in Boring 2 exhibited permeabilities of less than 0.06



inches per hour. It is possible that the bottom of the cased borehole test for Boring 2 was at or near the groundwater level which may explain the slow rate observed even though the soils were sandy.

Please contact us if you have any questions regarding this information.

The following Plates and Appendix are attached and complete this report:

- Plate 1 – Site Location Map
- Plate 2 – Plot Plan
- Plates 3-1 through 3-28 – Test Pit Logs
- Plates 4-1 and 4-2 – Test Boring Logs
- Plate 5 – USDA Soil Textural Triangle
- Plates 6-1 and 6-2 – Gradation Curves
- Plate 7 – Summary of Laboratory Tube Permeameter Permeability Test Results
- Appendix – Limitations

Respectfully submitted,

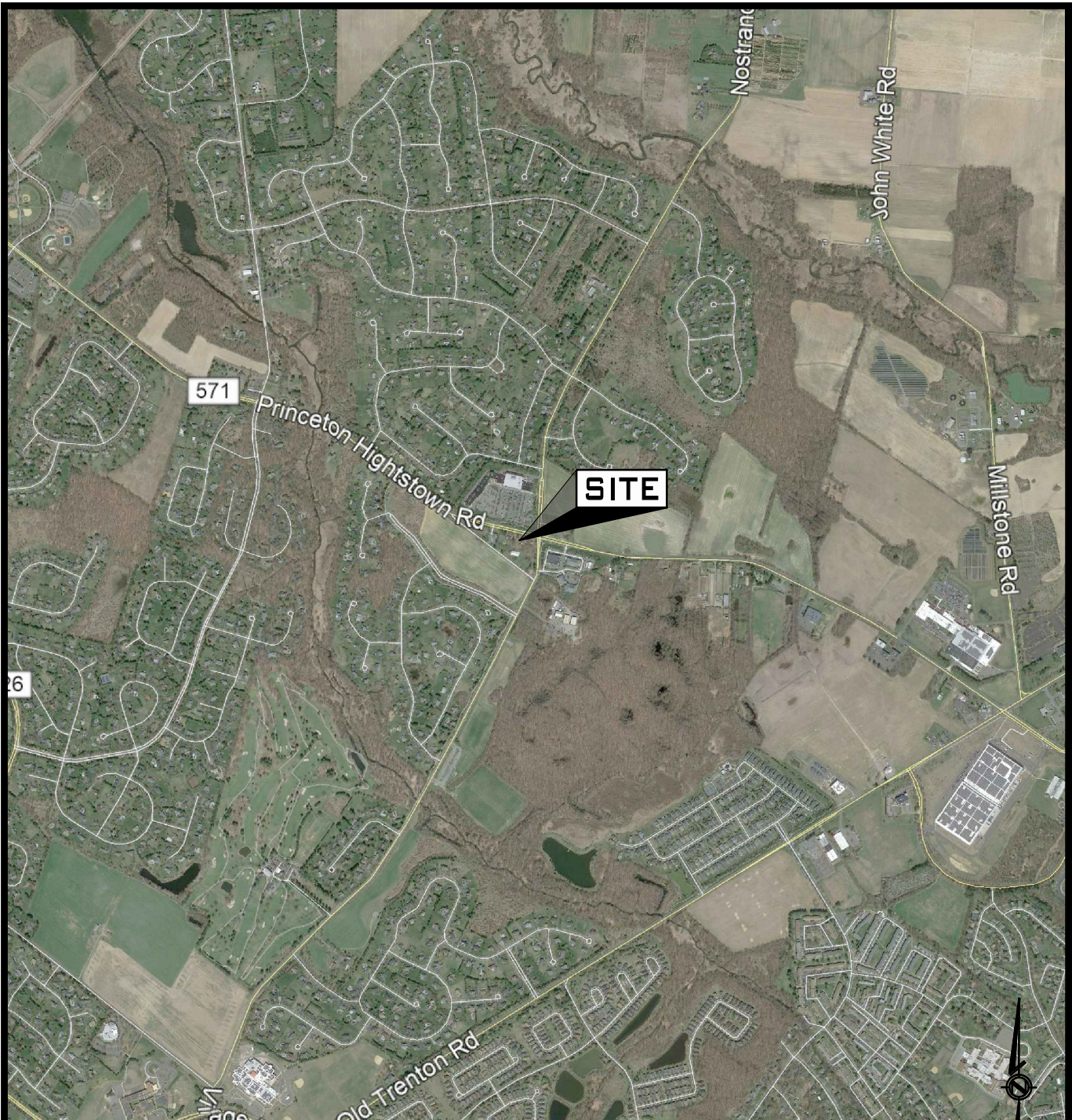
MELICK-TULLY and ASSOCIATES,  
a Division of GZA GeoEnvironmental, Inc.

Cory S. Karinja, P.E.  
Project Manager

Eugene M. Gallagher, Jr., P.E.  
Principal

Mark R. Denno, P.E.  
Consultant/Reviewer

CSK:EMG/mh  
(1 copy submitted via e-mail)



Aerial Photo courtesy of Google Earth Pro



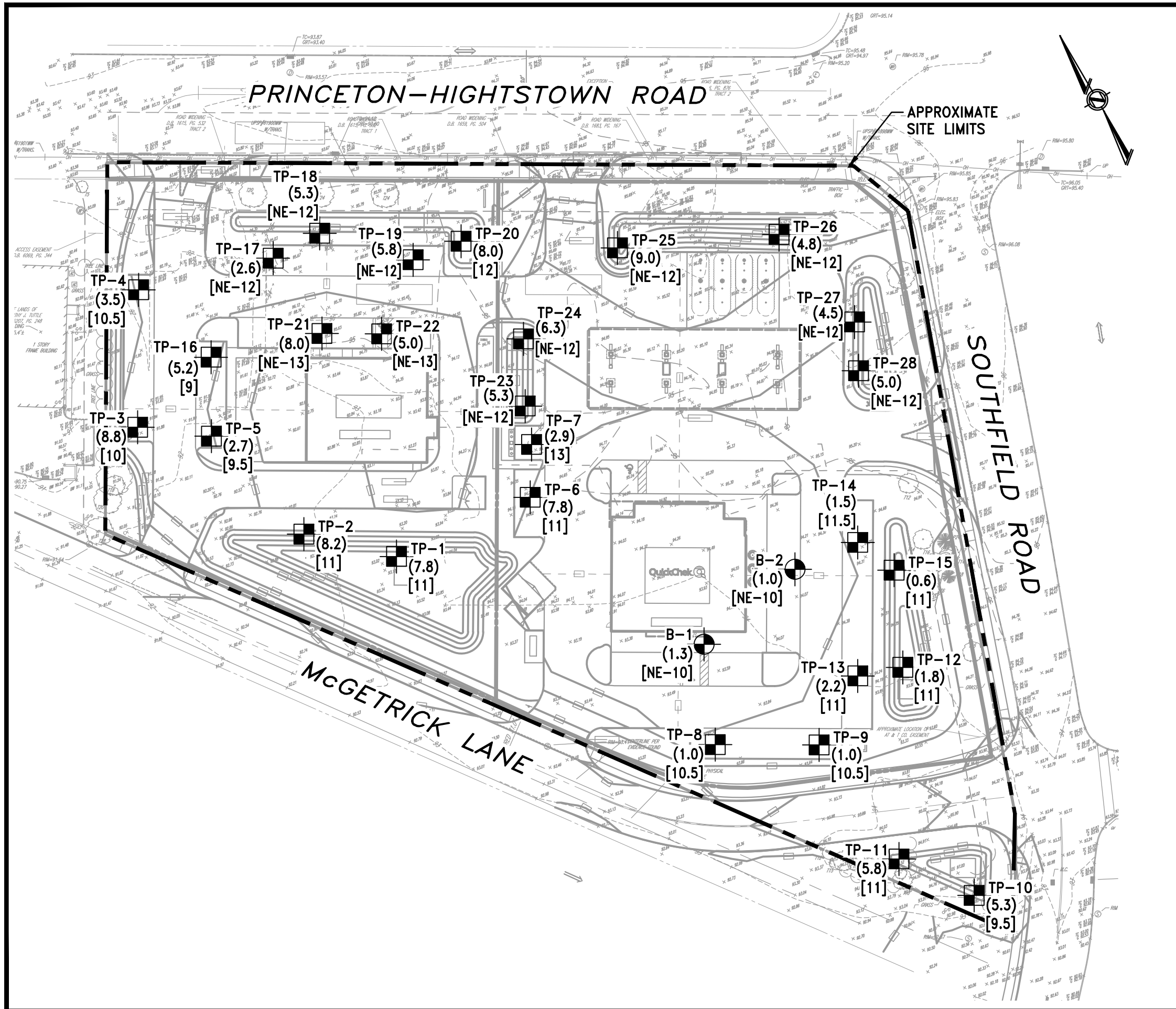
**MELICK-TULLY AND ASSOCIATES**  
*A Division of GZA*  
 Geotechnical Engineers & Environmental Consultants  
 117 Canal Road  
 South Bound Brook, New Jersey 08880  
 (732) 356-3400

## SITE LOCATION MAP



**PROPOSED QUICK CHEK FOOD STORE  
 WEST WINDSOR, NEW JERSEY  
 ER/UDC WEST WINDSOR, LLC**

<b>JOB NO.</b> 26.0092434.00	<b>FILE NO.</b> -	<b>DR. BY</b> VJD	<b>CHK. BY</b> CSK	<b>DATE</b> 8/5/21	<b>SCALE</b> 1"=2,000'	<b>PLATE</b> 1
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**KEY:**

-  **B-1** NUMBER AND APPROXIMATE LOCATION OF BORINGS PERFORMED FOR THIS STUDY
-  **TP-1** NUMBER AND APPROXIMATE LOCATION OF TEST PITS PERFORMED FOR THIS STUDY
- (1.0)** APPROXIMATE DEPTH IN FEET TO SOIL MOTTLING BELOW THE EXISTING GROUND SURFACE
- [10]** APPROXIMATE DEPTH IN FEET TO GROUNDWATER BELOW THE GROUND SURFACE
- NE** NOT ENCOUNTERED

**NOTES:**

1. This drawing is part of Melick-Tully and Associates, a Division of GZA, Report No. 26.0092434.00 and should be read together with the report for complete evaluation.
2. General layout was obtained from a drawing prepared by Bohler Eng., entitled "Grading Plan" dated 4/28/20 (revised 4/27/21), scale 1"= 30'.

<b>PLOT PLAN</b>				
PROPOSED QUICK CHEK FOOD STORE WEST WINDSOR, NEW JERSEY ER/UDC WEST WINDSOR, LLC				
 <b>MELICK-TULLY AND ASSOCIATES</b> <i>A Division of GZA</i> Geotechnical Engineers & Environmental Consultants 117 Canal Road South Bound Brook, New Jersey 08880 (732) 356-3400				
JOB NO.		FILE NO.		
26.0092434.00		-		
DR. BY	CHK. BY	DATE	SCALE	PLATE
VJD	CSK	8/5/21	1"= 60'	2

**TEST PIT LOG**



**MTA, a Division of GZA  
GeoEnvironmental, Inc**  
*Engineers and Scientists*

**East Ridge Development  
Prop. Quick Chek Food Store and Restaurant  
West Windsor, NJ**

**EXPLORATION NO.: TP-1  
SHEET: 1 of 1  
PROJECT NO: 26.0092434.00  
REVIEWED BY: Cory Karinja**

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12.5

**Ground Surface Elev. (ft.):** 93

**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/26/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	1.5	0-12	Topsoil - Brown (10YR, 5/3) sandy loam, 10% gravel, moderate medium granular, slightly moist, friable, abrupt smooth boundary, common medium roots	1		
2			12-27	Light yellowish brown (10YR, 6/4) sandy clay loam, 5% gravel, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary	2		
3	S2, T2	3	27-42	Dark yellowish brown (10YR, 4/6) sandy loam, 30% gravel, 10% cobbles, moderate medium granular, slightly moist, friable, clear smooth boundary	3		
4	S3, T3	5.5	42-94	Strong brown (7.5YR, 5/8) sandy loam, moderate medium granular, slightly moist, friable, clear smooth boundary	4		
5					5		
6					6		
7	S4, T4	9	94-150	Yellowish brown (10YR, 5/6) sandy clay loam, 5% gravel, moderate medium crumb, wet, friable, common medium prominent light gray (10YR, 7/1) mottles encountered from 94 inches to 150 inches	7		
8					8		
9					9		
10					10		
11					11		
12					12		
13				End of exploration at 12.5 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 94"			
14				Note: Sidewalls caving below 10'			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-1**

**TEST PIT LOG**



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*Engineers and Scientists*

**East Ridge Development**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.:** TP-2  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12.5

**Ground Surface Elev. (ft.):** 93

**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/26/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark	
1	S1, T1	1	0-10	Topsoil - Brown (10YR, 5/3) sandy loam, moderate medium granular, slightly moist, friable, abrupt smooth boundary, common medium roots	1			
2			10-23	Light yellowish brown (10YR, 6/4) sandy clay loam, 25% gravel, moderate medium crumb, slightly moist, friable, clear smooth boundary, few medium roots	2			
3	S2, T2	3	23-55	Yellowish brown (10YR, 5/6) sandy loam, 35% gravel, 10% cobbles, moderate medium granular, slightly moist, friable, clear smooth boundary	3			
4						4		
5	S3, T3	6	55-98	Light yellowish brown (10YR, 6/4) sandy loam, 10% gravel, moderate medium granular, moist, friable, clear smooth boundary	5			
6						6		
7						7		
8						8		
9	S4, T4	10	98-150	Yellowish brown (10YR, 5/6) sandy clay loam, 15% gravel, moderate medium crumb, wet, friable, common medium prominent light gray (10YR, 7/1) mottled encountered from 98 inches to 150 inches	9			
10						10		
11						11		
12					12			
13				End of exploration at 12.5 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 98"				
14								
15								

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-2**

**TEST PIT LOG**



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*Engineers and Scientists*

**East Ridge Development**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.: TP-3**  
**SHEET: 1 of 1**  
**PROJECT NO: 26.0092434.00**  
**REVIEWED BY: Cory Karinja**

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 91

**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/26/21		10	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-7	Topsoil - Brown (10YR, 6/3) sandy loam, moderate medium granular, slightly moist, loose, abrupt smooth boundary, common medium roots	1		
2			7-38	Yellowish brown (10YR, 5/4) clay loam, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary	2		
3	S2, T2	4	38-64	Yellowish brown (10YR, 5/6) loamy sand, 25% gravel, moderate medium granular, slightly moist, friable, clear smooth boundary	3		
4					4		
5	S3, T3	7	64-106	Light brownish gray (10YR, 6/2) loamy sand, strong medium granular, slightly moist, loose, clear smooth boundary	5		
6					6		
7					7		
8	S4, T4	10	106-156	Yellowish brown (10YR, 5/6) sandy clay loam, 30% gravel, moderate medium granular, wet, friable, common medium prominent light gray (10YR, 7/1) mottles encountered from 106 inches to 156 inches	8		
9					9		
10					10		
11					11		
12					12		
13					13		
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 10' Soil mottling observed @ 106"			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-3**

**TEST PIT LOG**



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*Engineers and Scientists*

**East Ridge Development**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.: TP-4**  
**SHEET: 1 of 1**  
**PROJECT NO: 26.0092434.00**  
**REVIEWED BY: Cory Karinja**

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 92

**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/26/21		10.5	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark		
1	S1, T1	2	0-7	Topsoil - Brown (10YR, 5/3) sandy loam, moderate medium granular, slightly moist, loose, abrupt smooth boundary, common medium roots	1	16.6			
2			7-42	Yellowish brown (10YR, 5/4) clay loam, moderate medium subangular blocky, moist, friable, clear smooth boundary, common fine faint light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 27 inches to 42 inches	2				
3	S2, T2	4	42-82	Light brownish gray (10YR, 6/2) sandy clay loam, moderate medium subangular blocky, slightly moist, firm, clear smooth boundary, many coarse prominent strong brown (7.5YR, 4/6) mottles encountered from 42 inches to 82 inches	3				
4					4				
5					5				
6	S3, T3	8	82-94	Light yellowish brown (10YR, 6/4) sandy loam, moderate medium granular, moist, friable, clear smooth boundary	6				
7					7				
8					8				
9	S4, T4	9	94-156	Light gray (10YR, 7/2) fine sandy loam, moderate coarse granular, moist, friable, many coarse prominent strong brown (7.5YR, 4/6) mottles encountered from 94 inches to 140 inches	9				
10	St	12			10				
11					11				
12				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 10.5' Soil mottling observed @ 42"	12				
13					13				
14									
15									

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-4**

**TEST PIT LOG**



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**East Ridge Development**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.: TP-5**  
**SHEET: 1 of 1**  
**PROJECT NO: 26.0092434.00**  
**REVIEWED BY: Cory Karinja**

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 92

**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/26/21		9.5	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	1	0-7	Topsoil - Brown (10YR, 5/3) sandy loam, moderate medium granular, slightly moist, loose, abrupt smooth boundary, common medium roots	1		
2			7-27	Yellowish brown (10YR, 5/4) clay, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary	2		
3			27-32	Yellowish brown (10YR, 5/8) loamy sand, 10% gravel, moderate coarse granular, slightly moist, loose, abrupt smooth boundary	3		
4	S2, T2	4	32-105	Pale brown (10YR, 6/3) sandy loam, moderate medium granular, moist, friable, clear smooth boundary, common medium prominent light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 32 inches to 105 inches	4		
5						5	
6					6		
7					7		
8					8		
9					9		
10	S3, T3	10	105-144	Strong brown (7.5YR, 4/6) sandy loam, strong coarse granular, wet, loose	10		
11						11	
12					12		
13				End of exploration at 12 feet. Moderate groundwater seepage encountered @ 9.5' Soil mottling observed @ 32"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-5**

**TEST PIT LOG**



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**GeoEnvironmental, Inc**  
*Engineers and Scientists*

**East Ridge Development**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.:** TP-6  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Final Test Pit Depth (ft.):** 13  
**Ground Surface Elev. (ft.):** 94  
**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/26/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-3	Topsoil - Brown (10YR, 6/3) sandy loam, moderate medium granular, slightly moist, loose, abrupt smooth boundary, common medium roots	1		
2			3-34	Yellowish brown (10YR, 5/6) clay, moderate medium subangular blocky, slightly moist, firm, clear smooth boundary	2		
3	S2, T2	4	34-64	Strong brown (7.5YR, 4/6) loam, 10% gravel, moderate medium granular, slightly moist, friable, clear smooth boundary	3		
4					4		
5	S3, T3	6	64-156	Strong brown (7.5YR, 4/6) loamy sand, moderate medium granular, slightly moist, friable, common medium prominent light gray (10YR, 7/1) mottles encountered from 93 inches to 156 inches	5		
6					6		
7					7		
8					8		
9	S4, T4	11	64-156	Strong brown (7.5YR, 4/6) loamy sand, moderate medium granular, slightly moist, friable, common medium prominent light gray (10YR, 7/1) mottles encountered from 93 inches to 156 inches	9		
10					10		
11					11		
12					12		
13				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 93"	13		
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-6**

**TEST PIT LOG**



**MTA, a Division of GZA**  
**GeoEnvironmental, Inc**  
*Engineers and Scientists*

**East Ridge Development**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.:** TP-7  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Ground Surface Elev. (ft.):** 94

**Final Test Pit Depth (ft.):** 13  
**Date Start - Finish:** 7/26/2021 - 7/26/2021

**Type of Excavator:** Track Excavator

**Excavator Model:** CAT 308

**Groundwater Depth (ft.)**

Date	Time	Water Depth	Stab.Time
7/26/21		13	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1			0-13	Topsoil - Brown (10YR, 5/3) silt loam, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, common medium roots	1		
2	S1, T1	2	13-35	Yellowish brown (10YR, 5/6) sandy loam, 40% gravel, moderate coarse granular, friable, clear smooth boundary	2		
3					3		
4	S2, T2	4	35-80	Yellowish brown (10YR, 5/6) sandy loam, 40% gravel, moderate medium subangular blocky, moist, firm, clear smooth boundary, common medium prominent light gray (10YR, 7/1) mottles encountered from 35 inches to 80 inches	4	8.8	
5					5		
6					6		
7					7		
8	S3, T3	8	80-156	Light brownish gray (10YR, 6/2) sandy loam, moderate medium granular, moist, friable	8		
9					9		
10					10		
11					11		
12					12		
13	S4	13			13		
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 13' Soil mottling observed @ 35"			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-7**



**TEST PIT LOG**



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**West Windsor, NJ**

**EXPLORATION NO.:** TP-8  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 94

**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/27/21		10.5	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2.5	0-12	Topsoil - Brown (10YR, 5/3) sandy loam, 20% gravel, 10% cobbles, moderate medium granular, slightly moist, loose, abrupt smooth boundary, common fine roots	1		
2			12-54	Light yellowish brown (10YR, 6/4) clay loam, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, common medium distinct strong brown (7.5YR, 4/6) and light gray (10YR, 7/1) mottles encountered from 12 inches to 54 inches	2		
3	S2, T2	5.5	53-75	Yellowish brown (10YR, 5/4) loam, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, common medium distinct light gray (10YR, 7/1) mottles encountered from 53 inches to 75 inches	3		
4							
5	S3, T3	6.5	75-156	Yellowish brown (10YR, 6/8) loamy sand, 15% gravel, moderate medium granular, slightly moist, loose, common fine distinct light gray (10YR, 7/1) mottles encountered from 75 inches to 156 inches	5		
6							
7				- (wet)	7		
8					8		
9					9		
10					10		
11					11		
12					12		
13					13		
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 10.5' Soil mottling observed @ 12"			
15				Note: Sidewalls collapsing below 9'			

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-8**

**TEST PIT LOG**



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**West Windsor, NJ**

**EXPLORATION NO.: TP-9**  
**SHEET: 1 of 1**  
**PROJECT NO: 26.0092434.00**  
**REVIEWED BY: Cory Karinja**

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 94

**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/27/21		10.5	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1			0-12	Topsoil - Brown (10YR, 5/3) sandy loam, 15% gravel, moderate fine granular, slightly moist, loose, abrupt smooth boundary, common fine roots	1		
2			12-65	Brown (10YR, 5/3) silty clay loam, moderate medium subangular blocky, slightly moist, friable, diffuse smooth boundary, common medium distinct light gray (10YR, 7/1) and yellowish brown (10YR, 5/8) mottles encountered from 12 inches to 65 inches	2		
3	S1, T1	3			3		
4			65-156	Yellowish brown (10YR, 5/6) sandy loam, 20% gravel, strong coarse granular, slightly moist, loose, common medium prominent light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 65 inches to 156 inches	4		
5					5		
6	S2, T2	6			6		
7			65-156	- (wet)	7		
8					8		
9					9		
10					10		
11					11		
12					12		
13					13		
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 10.5' Soil mottling observed @ 12"			
15				Note: Sidewalls collapsing below 8'			

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-9**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-10  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Ground Surface Elev. (ft.):** 94

**Final Test Pit Depth (ft.):** 13  
**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Excavator Model:** CAT 308

**Groundwater Depth (ft.)**

Date	Time	Water Depth	Stab.Time
7/27/21		9.5	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2.5	0-64	Fill - Light yellowish brown (10YR, 6/4) sandy loam, 10% gravel, weak fine granular, slightly moist, friable, abrupt smooth boundary, common medium roots	1		
2							
3							
4	S2, T2	6	64-105	Strong brown (7.5YR, 4/6) loam, 20% gravel, moderate coarse granular, moist, loose, clear smooth boundary, common coarse prominent light gray (10YR, 7/1) mottles encountered from 64 inches to 105 inches	4		
5							
6							
7	S3, T3	10	105-156	Light brownish gray (10YR, 6/2) loamy sand, 20% gravel, strong coarse granular, wet, loose, many coarse distinct light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 105 inches to 156 inches	7		
8							
9							
10							
11							
12							
13							
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 9.5' Soil mottling observed @ 64"			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-10**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-11  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 94.5

**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/27/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1				Fill - Brown (10YR, 5/3) sandy clay loam, 20% gravel, 10% cobbles, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, common medium roots	1		
2					2		
3	S1, T1	3	0-70		3		
4				Brown (10YR, 5/3) loam, 10% gravel, moderate medium granular, slightly moist, friable, clear smooth boundary, common medium distinct light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 70 inches to 98 inches	4		
5					5		
6	S2, T2	6.5	70-98		6		
7				Yellowish brown (10YR, 5/6) sandy loam, 10% gravel, moderate medium granular, wet, loose, common medium distinct light gray (10YR, 7/1) mottled encountered 98 inches to 156 inches	7		
8					8		
9	S3, T3	9	98-156		9		
10				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 70"	10		
11					11		
12					12		
13				Note: Sidewalls caving below 10'	13		
14					14		
15					15		

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.:** 3-11

### TEST PIT LOG



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**EXPLORATION NO.:** TP-12  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 94

**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab. Time
7/27/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	3	0-12	Topsoil - Brown (10YR, 5/3) sandy loam, weak medium granular, moist, loose, clear smooth boundary, common medium roots	1	9.3	
2			12-78	Yellowish brown (10YR, 5/6) clay, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, common medium distinct light gray (10YR, 7/1) mottles encountered from 21 inches to 78 inches	2		
3	S2, T2	7.5	78-130	Brown (10YR, 5/3) sandy loam, 15% gravel, moderate medium subangular blocky, moist, friable, clear smooth boundary, common medium distinct light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 78 inches to 130 inches	3		
4				130-156	Yellowish brown (10YR, 5/8) sandy loam, moderate medium granular, wet, friable		
5	S3, T3	11	130-156	End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 21"	5		
6				130-156	End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 21"		
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13					13		
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-12**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-13  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Ground Surface Elev. (ft.):** 94

**Final Test Pit Depth (ft.):** 13  
**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Excavator Model:** CAT 308

**Groundwater Depth (ft.)**

Date	Time	Water Depth	Stab.Time
7/27/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1			0-26	Topsoil - Brown (10YR, 5/3) sandy loam, 10% gravel, moderate medium crumb, moist, friable, abrupt smooth boundary, common medium roots	1		
3	S1, T1	3	26-68	Yellowish brown (10YR, 5/4) clay, moderate medium subangular blocky, slightly moist, firm, clear smooth boundary, common medium prominent light gray (10YR, 7/1) mottles encountered from 26 inches to 68 inches	3		
6	S2, T2	6.5	68-105	Light brownish gray (10YR, 6/2) sandy loam, 20% gravel, moderate medium granular, moist, loose, clear smooth boundary	6		
9	S3, T3	9.5	105-156	Yellowish red (5YR, 4/6) sandy loam, 35% gravel, moderate coarse granular, moist, loose, common medium distinct light brownish gray (10YR, 6/2) mottles from 132 inches to 156 inches	9		
13				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 26"	13		

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-13**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-14  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Ground Surface Elev. (ft.):** 94

**Final Test Pit Depth (ft.):** 13  
**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Excavator Model:** CAT 308

**Groundwater Depth (ft.)**

Date	Time	Water Depth	Stab.Time
7/27/21		11.5	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1			0-12	Topsoil - Brown (10YR, 5/3) sandy loam, moderate medium granular, moist, loose, clear smooth boundary, common medium roots	1		
2				Yellowish brown (10YR, 5/4) silty clay loam, strong coarse subangular blocky, slightly moist, firm, clear smooth boundary, common medium distinct light gray (10YR, 7/1) mottles encountered from 17 inches to 58 inches	2		
3	S1, T1	3	12-58		3		
4				Strong brown (7.5YR, 4/6) loamy sand, moderate coarse granular, moist, loose, clear smooth boundary	4		
5					5		
6	S2, T2	6	58-92	6			
7				Brownish yellow (10YR, 6/6) sandy loam, strong coarse granular, moist, loose, common medium distinct light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 92 inches to 156 inches	7		
8					8		
9	S3, T3	9			9		
10			92-156	10			
11				11			
12				12			
13				13			
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11.5' Soil mottling observed @ 12"			
15				Note: Sidewalls collapsing below 10.5'			

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-14**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-15  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 94

**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/27/21		11	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	3	0-7	Topsoil - Brown (10YR, 5/3) sandy loam, moderate fine crumb, moist, loose, abrupt smooth boundary, common medium roots	1		
2				Yellowish brown (10YR, 5/4) clay loam, moderate coarse subangular blocky, slightly moist, firm, clear smooth boundary, common medium distinct light gray (10YR, 7/1) mottles encountered from 7 inches to 65 inches	2		
3	S2, T2	6.5	7-65		3		
4					Yellowish brown (10YR, 5/6) sandy loam, moderate medium granular, moist, loose, clear smooth boundary	4	
5	S3, T3	9	65-98		5		
6					Light brownish gray (10YR, 6/2) sandy loam, moderate medium granular, moist, loose, many coarse prominent strong brown (7.5YR, 4/6) mottles encountered from 98 inches to 156 inches	6	
7			98-156		7		
8					8		
9					9		
10					10		
11					11		
12					12		
13					13		
14				End of exploration at 13 feet. Moderate groundwater seepage encountered @ 11' Soil mottling observed @ 7"			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-15**



**TEST PIT LOG**



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**EXPLORATION NO.:** TP-16  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Ground Surface Elev. (ft.):** 91.5

**Final Test Pit Depth (ft.):** 12  
**Date Start - Finish:** 7/27/2021 - 7/27/2021

**Type of Excavator:** Track Excavator

**Excavator Model:** CAT 308

**Groundwater Depth (ft.)**

Date	Time	Water Depth	Stab.Time
7/27/21		9	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark	
1	S1, T1	1.5	0-2	2" Asphalt	1	4.1		
			2-15					
2	S2, T2	3	15-27	Yellowish brown (10YR, 5/6) sandy clay loam, moderate medium subangular blocky, moist, friable, clear smooth boundary	2			
3			27-62	Fill - Dark gray (10YR, 4/1) clay, 45% gravel, moderate coarse subangular blocky, slightly moist, firm, clear smooth boundary	3			
4	S3, T3	6	62-104	Yellowish brown (10YR, 5/6) sand, single grain, slightly moist, loose, clear smooth boundary	4			
5								5
6								6
7	S4, T4	10	104-144	Brownish yellow (10YR, 6/6) loam, 5% gravel, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, common medium faint light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 62 inches to 104 inches	7			
8								8
9								9
10				Strong brown (7.5YR, 4/6) sandy loam, 20% gravel, moderate medium granular, wet, friable	10			
11					11			
12					12			
13				End of exploration at 12 feet. Moderate groundwater seepage encountered @ 9' Soil mottling observed @ 62"				
14								
15								

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-16**

**TEST PIT LOG**



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**West Windsor, NJ**

**EXPLORATION NO.:** TP-17  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 94.5

**Date Start - Finish:** 7/28/2021 - 7/28/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/28/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1			0-16	Topsoil - Grayish brown (10YR, 5/2) loam, 10% gravel, moderate medium crumb, slightly moist, firm, abrupt smooth boundary, common medium roots	1		
2	S1, T1	2	16-31	Fill - Yellowish brown (10YR, 5/8) sandy loam, 10% gravel, moderate medium granular, slightly moist, friable, abrupt smooth boundary	2		
3					3		
4	S2, T2	3.5	31-46	Brown (10YR, 4/3) sandy clay loam, 35% gravel, moderate coarse subangular blocky, slightly moist, firm, clear smooth boundary, common medium distinct light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 31 inches to 46 inches	4		
5					5		
6	S3, T3	5	46-90	Yellowish brown (10YR, 5/6) sandy loam, 10% gravel, moderate medium granular, slightly moist, firm, clear smooth boundary, common medium faint light gray (10YR, 7/1) mottles encountered from 46 inches to 90 inches	6		
7					7		
8					8		
9					9		
10			90-144	Yellowish brown (10YR, 5/6) loam, 20% gravel, moderate medium subangular blocky	10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 31"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.:** 3-17

**TEST PIT LOG**



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**West Windsor, NJ**

**EXPLORATION NO.:** TP-18  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 96

**Date Start - Finish:** 7/28/2021 - 7/28/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/28/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1			0-16	Topsoil - Dark gray (10YR, 4/1) sandy loam, moderate medium granular, slightly moist, friable, clear smooth boundary, common medium roots	1		
2				Yellowish brown (10YR, 5/6) loam, 20% gravel, moderate coarse granular, slightly moist, friable, clear smooth boundary	2		
3	S1, T1	3	16-64		3		
4					4		
5					5		
6	S2, T2	6		Yellowish brown (10YR, 5/6) sandy loam, 15% gravel, moderate medium granular, slightly moist, friable, common medium faint light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 64 inches to 144 inches	6		
7					7		
8					8		
9			64-144		9		
10					10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 64"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-18**

**TEST PIT LOG**



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**West Windsor, NJ**

**EXPLORATION NO.:** TP-19  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 95

**Date Start - Finish:** 7/28/2021 - 7/28/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/28/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
			0-2	2" Asphalt			
1	S1, T1	1.5	2-18	Dark gray (10YR, 4/1) sandy loam, 45% gravel, moderate medium granular, slightly moist, firm, abrupt smooth boundary	1	12.3	
2			18-34	Yellowish brown (10YR, 5/8) sandy clay loam, 10% gravel, moderate coarse subangular blocky, slightly moist, firm, clear smooth boundary	2		
3			34-70	Yellowish brown (10YR, 5/6) sandy loam, 10% gravel, moderate medium granular, slightly moist, firm, clear smooth boundary	3		
4	S2, T2	4			4		
5					5		
6	S3, T3	7	70-144	Light yellowish brown (10YR, 6/4) sandy loam, 10% gravel, moderate coarse granular, moist, friable, common medium distinct light gray (10YR, 7/1) mottles encountered from 70 inches to 144 inches	6		
7					7		
8							8
9					9		
10					10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 70"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.:** 3-19

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-20  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 95.5

**Date Start - Finish:** 7/28/2021 - 7/28/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/28/21		12	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-12	Topsoil - Brown (10YR, 5/3) sandy loam, 5% gravel, moderate medium crumb, slightly moist, loose, clear smooth boundary, common coarse roots	1		
2			12-44	Yellowish brown (10YR, 5/6) clay, moderate coarse subangular blocky, slightly moist, firm, clear smooth boundary	2		
3	S2, T2	4.5	44-130	Yellowish brown (10YR, 5/6) sandy loam, 10% gravel, moderate medium granular, slightly moist, loose, clear smooth boundary, common medium faint light gray (10YR, 7/1) mottles encountered from 96 inches to 130 inches	3		
4					4		
5					5		
6	S3, T3	11	130-144	Brownish yellow (10YR, 6/6) sandy loam, moderate medium granular, wet, friable	6		
7					7		
8					8		
9					9		
10					10		
11					11		
12				End of exploration at 12 feet. Slight groundwater seepage encountered @ 12' Soil mottling observed @ 96"	12		
13							
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-20**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-21  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 95

**Date Start - Finish:** 7/29/2021 - 7/29/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/29/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-8	Topsoil - Very dark brown (7.5YR, 2.5/2) loam, moderate fine crumb, slightly moist, loose, clear smooth boundary, common medium roots	1		
2				Fill - Brown (10YR, 5/3) sandy clay loam, 10% gravel, moderate medium subangular blocky, slightly moist, firm, clear wavy boundary	2		
3	S2, T2	6	8-60		3		
4						4	
5	S3, T3	10	60-96	Yellowish brown (10YR, 5/6) sandy clay loam, 15% gravel, moderate medium subangular blocky, moist, firm, gradual smooth boundary	5		
6						6	
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13					13		
14				End of exploration at 13 feet. Groundwater seepage not encountered Soil mottling observed @ 96"			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-21**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-22  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 13

**Ground Surface Elev. (ft.):** 95

**Date Start - Finish:** 7/29/2021 - 7/29/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/29/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	T1	2	0-8	Topsoil - Very dark brown (7.5YR, 2.5/2) loam, weak fine crumb, slightly moist, loose, abrupt smooth boundary, many medium roots	1		
2			8-54	Fill - Brown (10YR, 5/3) sandy clay loam, 10% gravel, moderate medium subangular blocky	2		
3	T2	6	54-90	Yellowish brown (10YR, 5/6) loam, 10% gravel, weak medium subangular blocky, slightly moist, firm, clear smooth boundary, few fine faint gray (7.5YR, 5/1) mottles encountered from 60 inches to 90 inches	3		
4					4		
5					5		
6	T3	10	90-156	Strong brown (7.5YR, 5/8) loamy sand, 10% gravel, moderate medium crumb, moist, firm, few fine faint light gray (7.5YR, 7/1) mottles encountered from 90 inches to 156 inches	6		
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13					13		
14				End of exploration at 13 feet. Groundwater seepage not encountered Soil mottling observed @ 60"			
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.:** 3-22

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-23  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 95

**Date Start - Finish:** 7/28/2021 - 7/28/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/28/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-7	Topsoil - Brown (10YR, 5/3) sandy loam, 10% gravel, moderate medium granular, slightly moist, loose, clear smooth boundary, common medium roots	1		
2			7-50	Brown (10YR, 5/3) clay loam, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary, few fine roots	2		
3	S2, T2	5	50-144	Yellowish brown (10YR, 5/6) loam, 30% gravel, moderate medium crumb, slightly moist, firm, common medium distinct light gray (10YR, 7/1) mottles encountered from 64 inches to 144 inches	3		
4					4		
5					5		
6					6		
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 64"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-23**



**TEST PIT LOG**



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**EXPLORATION NO.:** TP-24  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 95

**Date Start - Finish:** 7/28/2021 - 7/28/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/28/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark	
1	S1, T1	3	0-7	Topsoil - Brown (10YR, 5/3) sandy loam, moderate medium granular, slightly moist, loose, abrupt smooth boundary, common medium roots	1			
2				Yellowish brown (10YR, 5/6) clay, 5% gravel, moderate medium subangular blocky, slightly moist, friable, clear smooth boundary	2			
3	S2, T2	7.5	7-75		3			
4						4		
5						5		
6	S3, T3	12	75-137	Yellowish brown (10YR, 5/8) loam, 10% gravel, moderate medium granular, moist, friable, clear smooth boundary, common medium distinct light gray (10YR, 7/1) and strong brown (7.5YR, 4/6) mottles encountered from 75 inches to 137 inches	6			
7						7		
8						8		
9						9		
10			137-144	Yellowish brown (10YR, 5/4) sandy loam, moderate medium granular, moist, friable	10			
11					11			
12				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 75"	12			
13								
14								
15								

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-24**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-25  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan      **Final Test Pit Depth (ft.):** 12  
**Ground Surface Elev. (ft.):** 95.5      **Date Start - Finish:** 7/29/2021 - 7/29/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/29/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	T1	2	0-6	Topsoil - Very dark brown (7.5YR, 2.5/2) sandy loam, weak fine crumb, slightly moist, loose, abrupt smooth boundary, few fine roots	1	8.4	
2				Yellowish brown (10YR, 5/6) sandy loam, 10% gravel, weak medium subangular blocky, slightly moist, firm, gradual smooth boundary	2		
3				3			
4				4			
5			6-108	5			
6				6			
7	S1, T2	7		7			
8				8			
9				9			
10	S2, T3	10		Brownish yellow (10YR, 6/8) sandy loam, 10% gravel, moderate medium crumb, moist, firm, common fine distinct light gray (7.5YR, 7/1) mottles encountered from 108 inches to 144 inches	10		
11			108-144	11			
12				12			
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 108"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-25**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-26  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 96

**Date Start - Finish:** 7/29/2021 - 7/29/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/29/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-6	Topsoil - Very dark brown (7.5YR, 2.5/2) loam, weak fine crumb, slightly moist, loose, abrupt smooth boundary, common medium roots	1	11.1	
2			6-54	Yellowish brown (10YR, 5/6) clay loam, 5% gravel, moderate medium angular blocky, slightly moist, firm, clear wavy boundary	2		
3	S2, T2	6	54-96	Strong brown (7.5YR, 5/8) loam, 10% gravel, weak medium crumb, moist, firm, gradual smooth boundary, few fine faint light gray (7.5YR, 7/1) mottles encountered from 54 inches to 96 inches	3		
4				S3, T3	10		
5						5	
6					6		
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 54"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-26**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-27  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan  
**Ground Surface Elev. (ft.):** 96

**Final Test Pit Depth (ft.):** 12  
**Date Start - Finish:** 7/29/2021 - 7/29/2021

**Type of Excavator:** Track Excavator

**Excavator Model:** CAT 308

**Groundwater Depth (ft.)**

Date	Time	Water Depth	Stab.Time
7/29/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1, T1	2	0-4	Topsoil - Very dark brown (7.5YR, 2.5/2) sandy loam, 5-10% gravel, weak fine crumb, slightly moist, loose, abrupt smooth boundary, few fine roots	1		
2			4-60	Yellowish brown (10YR, 5/6) sandy clay loam, 10% gravel, moderate fine subangular blocky, slightly moist, firm, gradual smooth boundary, few fine faint light gray (7.5YR, 7/1) mottles encountered from 54 inches to 60 inches	2		
3	S2, T2	6	60-102	Brownish yellow (10YR, 6/8) sandy loam, 5% gravel, weak medium subangular blocky, moist, firm, clear smooth boundary, common fine distinct light gray (7.5YR, 7/1) mottles encountered from 60 inches to 102 inches	3		
4					4		
5	S3, T3	10	102-144	Strong brown (7.5YR, 5/8) loam, 15% gravel, moderate medium subangular blocky, moist, firm, common medium distinct light gray (7.5YR, 7/1) mottles encountered from 102 inches to 144 inches	5		
6					6		
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 54"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-27**

**TEST PIT LOG**



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**EXPLORATION NO.:** TP-28  
**SHEET:** 1 of 1  
**PROJECT NO:** 26.0092434.00  
**REVIEWED BY:** Cory Karinja

**Logged By:** Nick Pytlowany  
**Contractor:** Heritage  
**Operator:** Chris

**Test Pit Location:** See Plan

**Final Test Pit Depth (ft.):** 12

**Ground Surface Elev. (ft.):** 96

**Date Start - Finish:** 7/29/2021 - 7/29/2021

**Type of Excavator:** Track Excavator

**Groundwater Depth (ft.)**

**Excavator Model:** CAT 308

Date	Time	Water Depth	Stab.Time
7/29/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	T1	2	0-4	Topsoil - Very dark brown (7.5YR, 2.5/2) loam, weak fine crumb, slightly moist, loose, abrupt smooth boundary, common medium roots	1		
2			4-60	Yellowish brown (10YR, 5/6) sandy clay loam, 5-10% gravel, weak medium subangular blocky, slightly moist, firm, clear wavy boundary	2		
3	S2	6	60-90	Brownish yellow (10YR, 6/8) clay loam, 5% gravel, weak fine angular blocky, slightly moist, firm, clear smooth boundary, common fine distinct light gray (7.5YR, 7/1) mottles encountered from 60 inches to 90 inches	3		
4					4		
5	S3	10	90-144	Brownish yellow (10YR, 6/8) sandy loam, 5% gravel, moderate medium crumb, moist, firm, common fine distinct light gray (7.5YR, 7/1) mottles encountered from 90 inches to 144 inches	5		
6					6		
7					7		
8					8		
9					9		
10					10		
11					11		
12					12		
13				End of exploration at 12 feet. Groundwater seepage not encountered Soil mottling observed @ 60"			
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 3-28**

**TEST BORING LOG**



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**West Windsor, NJ**

**EXPLORATION NO.: B-1**  
**SHEET: 1 of 1**  
**PROJECT NO: 26.0092434.00**  
**REVIEWED BY: Cory Karinja**

**Logged By:** Ohm Patel  
**Contractor:** Gold Star  
**Operator:** Darren/Brian

**Test Pit Location:** See Plan      **Final Test Pit Depth (ft.):** 10  
**Ground Surface Elev. (ft.):** 94      **Date Start - Finish:** 8/13/2021 - 8/13/2021

**Type of Excavator:** Geoprobe

**Groundwater Depth (ft.)**

**Excavator Model:**

Date	Time	Water Depth	Stab.Time
8/13/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1	1.5	0-9	9" Topsoil - Brown (10YR, 4/3) silt loam, moderate medium crumb, dry, loose, few fine roots	1	26.0	
2			9-48	Yellowish brown (10YR, 5/4) silty clay, moderate medium subangular blocky, slightly moist, firm, common medium distinct light gray (10YR, 7/2) mottles encountered at 16 inches to 48 inches	2		
3					3		
4	S2	6.5	48-90	Light gray (10YR, 7/1) silt loam, moderate medium subangular blocky, slightly moist, friable, many coarse prominent dark reddish brown (5YR, 3/4) mottles encountered at 48 inches to 90 inches	4		
5							
6					6		
7					7		
8	S3	8.5	90-120	Brownish yellow (10YR, 6/8) loamy sand, 25% gravel, weak medium granular, slightly moist, friable, common medium distinct light brownish gray (10YR, 6/2) mottles encountered at 90 inches to 120 inches	8		
9							
10					10		
11				End of exploration at 10 feet. Groundwater seepage not encountered Soil mottling observed @ 16"			
12							
13							
14							
15							

**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 4-1**

**TEST BORING LOG**



**MTA, a Division of GZA**  
**GeoEnvironmental, Inc**  
*Engineers and Scientists*

**Quick Chek**  
**Prop. Quick Chek Food Store and Restaurant**  
**West Windsor, NJ**

**EXPLORATION NO.: B-2**  
**SHEET: 1 of 1**  
**PROJECT NO: 26.0092434.00**  
**REVIEWED BY: Cory Karinja**

**Logged By:** Ohm Patel  
**Contractor:** Gold Star  
**Operator:** Darren/Brian

**Test Pit Location:** See Plan  
**Final Test Pit Depth (ft.):** 10  
**Ground Surface Elev. (ft.):** 94  
**Date Start - Finish:** 8/13/2021 - 8/13/2021

**Type of Excavator:** Geoprobe

**Groundwater Depth (ft.)**

**Excavator Model:**

Date	Time	Water Depth	Stab.Time
8/13/21		NE	

Depth (ft)	Sample No.	Sample Depth (ft.)	Stratum Depth (in.)	Sample Description and Identification	Depth (ft)	Water Content (%)	Remark
1	S1	2	0-6	6" Topsoil - Brown (10YR, 4/3) silt loam, weak medium crumb, dry, loose, few fine roots	1	12.5	
2			6-45	Yellowish brown (10YR, 5/4) silty clay, moderate medium subangular blocky, dry, friable, common medium distinct light gray (10YR, 7/2) mottles encountered at 12 inches to 45 inches	2		
3	S2	6.5	45-90	Light gray (10YR, 7/1) loam, moderate medium subangular blocky, dry, friable, common medium distinct dark reddish brown (5YR, 3/4) mottles encountered at 45 inches to 90 inches	3		
4				S3	8		
5	5						
6	6						
7	7						
8	8						
9	9						
10	10						
11				End of exploration at 10 feet. Groundwater seepage not encountered Soil mottling observed @ 12"			
12							
13							
14							
15							

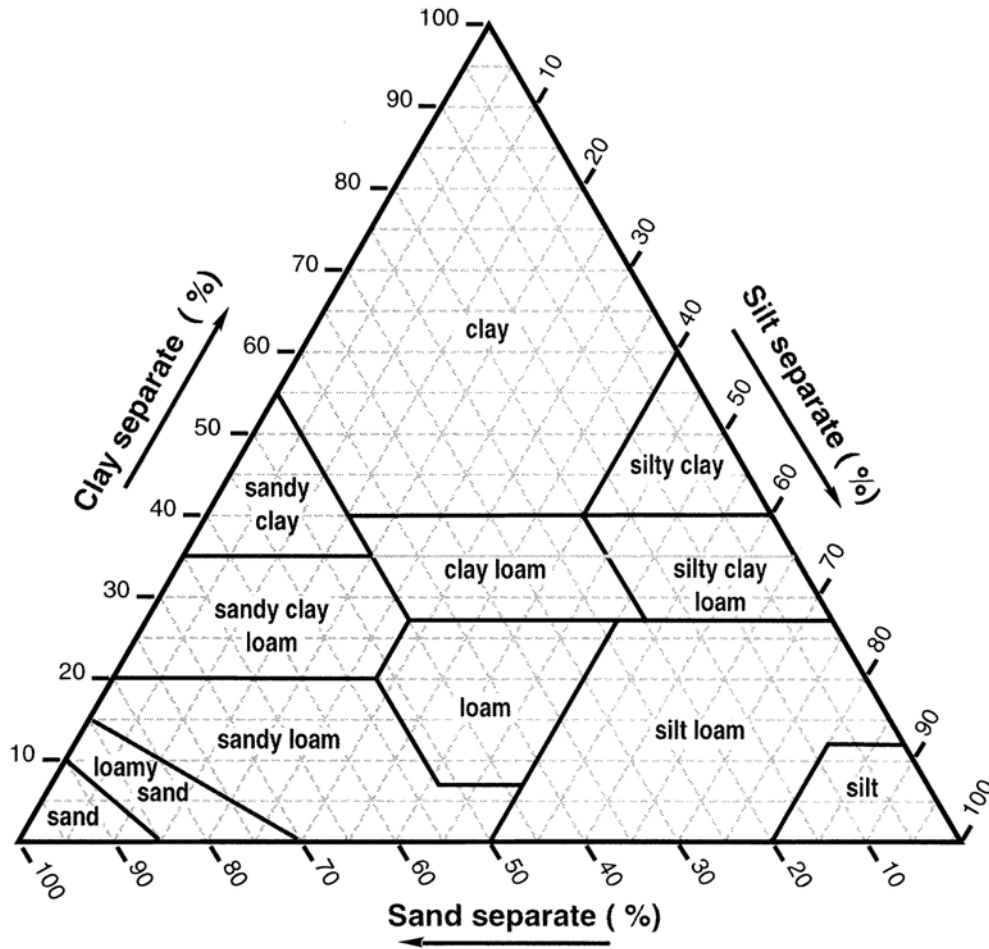
**REMARKS**

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

**Plate No.: 4-2**

# Texture Triangle:

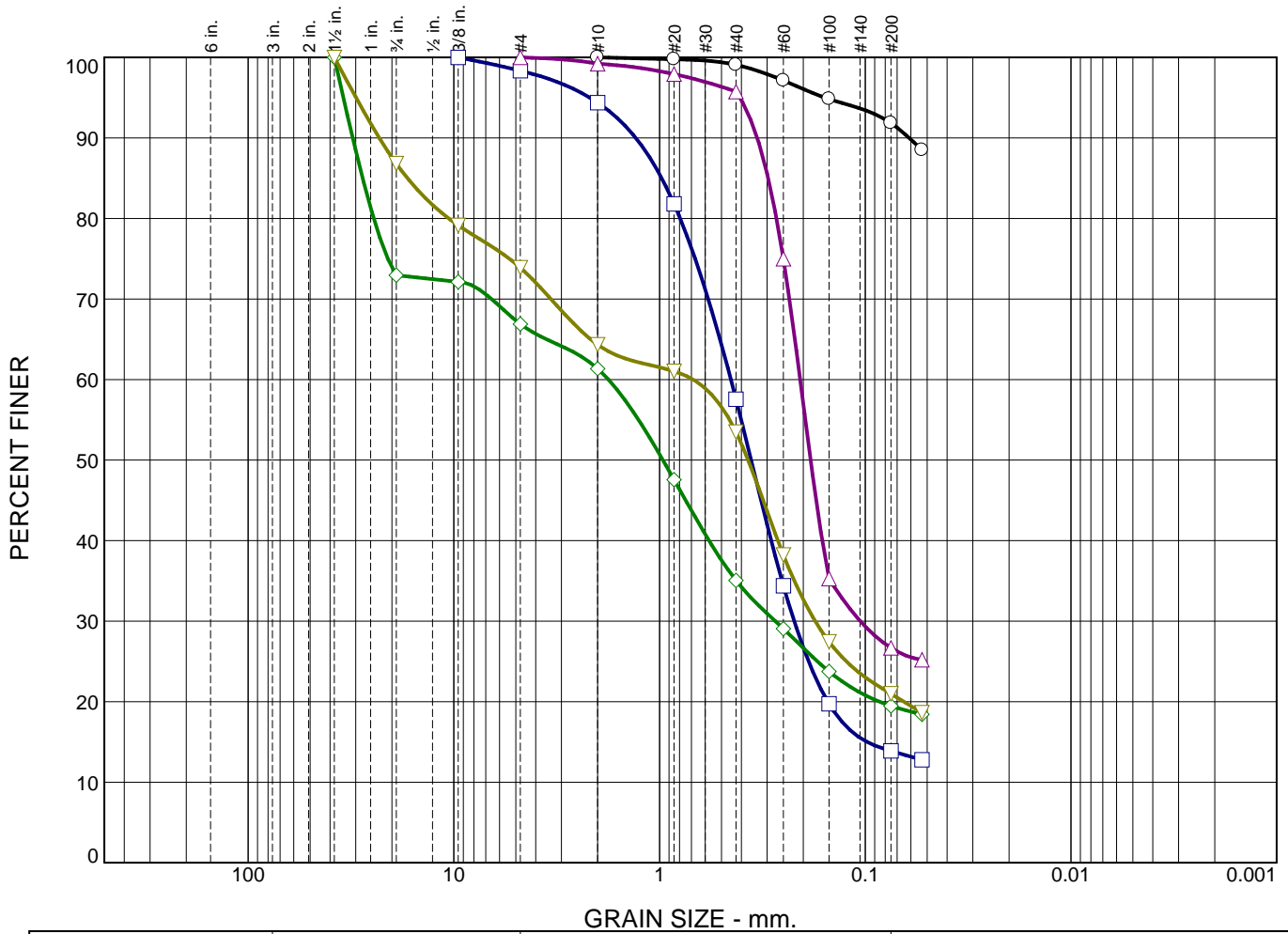
Fine Earth Texture Classes ( ——— )



USDA SOIL CLASSIFICATION SYSTEM



# Gradation Curve(s)



	% Cobbles	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	0.9	7.3	91.8	
□	0.0	0.0	1.7	3.9	36.8	43.7	13.9	
△	0.0	0.0	0.0	0.8	3.4	69.1	26.7	
◇	0.0	27.0	6.1	5.6	26.2	15.6	19.5	
▽	0.0	13.2	12.9	9.6	10.8	32.5	21.0	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1	1	1.5	Silty Clay (MC=26.0%)	CL
□	B-2	3	8	Loamy Sand (MC=12.5%)	SM
△	TP-4	4	9	Sandy Loam (MC=16.6%)	SM
◇	TP-7	2	4	Sandy Loam (MC=8.8%)	SM
▽	TP-12	2	7.5	Sandy Loam (MC=9.3%)	SM

**Melick-Tully & Associates**  
a Division of GZA GeoEnvironmental, Inc.  
South Bound Brook, NJ

**Client:** ER/UDC West Windsor  
**Project:** Proposed Quick Chek Food Store and Restaurant  
**Project No.:** 26.0092434.00



**Summary of Laboratory Tube Permeameter Permeability Test Results**  
**ER/UDC West Windsor LLC - West Windsor, NJ**  
**26.0092434.00**

<b>Test Pit No.</b>	<b>Depth (ft)</b>	<b>Permeability Rate (in/hr)</b>	<b>USDA Visual Soil Classification</b>
TP-1	5.5	>20	Loamy Sand
TP-1	9	0.91	Sandy Clay Loam
TP-2	3	3.5	Sandy Loam
TP-2	6	11.1	Sandy Loam
TP-2	10	0.44	Sandy Clay Loam
TP-3	4	>20	Loamy Sand
TP-3	7	17.5	Loamy Sand
TP-4	4	<0.06	Sandy Clay Loam
TP-4	9	<0.06	Fine Sandy Loam
TP-5	1	<0.06	Clay
TP-5	4	1.0	Sandy Loam
TP-6	4	4.0	Sandy Loam
TP-6	6	>20	Loamy Sand
TP-7	4	2.8	Sandy Loam
TP-7	8	4.0	Sandy Loam
TP-8	2.5	<0.06	Clay Loam
TP-8	6.5	16.6	Loamy Sand
TP-9	3	<0.06	Silty Clay Loam
TP-9	6	14.9	Sandy Loam
TP-10	6	1.9	Loam
TP-10	10	>20	Loamy Sand
TP-11	6.5	0.30	Loam
TP-11	9	2.2	Sandy Loam
TP-12	3	<0.06	Clay
TP-12	7.5	1.4	Sandy Loam
TP-13	3	<0.06	Clay
TP-13	6.5	1.5	Sandy Loam
TP-14	3	<0.06	Silty Clay Loam
TP-14	6	>20	Loamy Sand
TP-15	3	<0.06	Clay Loam
TP-15	6.5	16.3	Sandy Loam
TP-16	1.5	<0.06	Sandy Clay Loam
TP-16	3	>20	Sand
TP-17	3.5	<0.06	Sandy Clay Loam
TP-17	5	2.0	Sandy Loam
TP-18	3	<0.06	Loam
TP-18	6	6.4	Sandy Loam
TP-19	1.5	0.52	Sandy Clay Loam
TP-19	4	17.5	Sandy Loam

**Summary of Laboratory Tube Permeameter Permeability Test Results**  
**ER/UDC West Windsor LLC - West Windsor, NJ**  
**26.0092434.00**

<b>Test Pit No.</b>	<b>Depth (ft)</b>	<b>Permeability Rate (in/hr)</b>	<b>USDA Visual Soil Classification</b>
TP-20	2	<0.06	Clay
TP-20	4.5	>20	Sandy Loam
TP-21	6	2.6	Sandy Loam
TP-21	10	>20	Loamy Sand
TP-22	6	1.9	Loam
TP-22	10	>20	Loamy Sand
TP-23	2	<0.06	Clay Loam
TP-23	5	3.6	Sandy Loam
TP-24	3	<0.06	Clay
TP-24	7.5	7.7	Sandy Loam
TP-25	2	1.0	Sandy Loam
TP-25	7	1.5	Sandy Loam
TP-25	10	2.2	Sandy Loam
TP-26	2	<0.06	Clay Loam
TP-26	6	1.0	Sandy Loam
TP-27	6	5.5	Sandy Loam
TP-27	10	10.2	Loamy Sand
TP-28	2	0.74	Sandy Clay Loam
TP-28	10	7.1	Sandy Loam

## **APPENDIX**

## APPENDIX

### Limitations

#### A. Subsurface Information

Locations: The locations of the explorations were approximately determined by tape measurement from existing site features. Elevations of the explorations were approximately determined by interpolation between contours shown on topographic plans provided to us. The locations and elevations of the explorations should be considered accurate only to the degree implied by the method used.

Interface of Strata: The stratification lines shown on the individual logs of the subsurface explorations represent the approximate boundaries between soil types, and the transitions may be gradual.

Field Logs/Final Logs: A field log was prepared for each exploration by a member of our staff. The field log contains factual information and interpretation of the soil conditions between samples. Our recommendations are based on the final logs as shown in this report and the information contained therein, and not on the field logs. The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and/or tests of the field samples.

Water Levels: Water level readings have been made in the explorations at times and under conditions stated on the individual logs. These data have been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater will occur due to variations in rainfall, temperature, and other factors.

Pollution/Contamination: Unless specifically indicated to the contrary in this report, the scope of our services was limited only to investigation and evaluation of the geotechnical engineering aspects of the site conditions, and did not include any consideration of potential site pollution or contamination resulting from the presence of chemicals, metals, radioactive elements, etc. This report offers no facts or opinions related to potential pollution/contamination of the site.

Environmental Considerations: Unless specifically indicated to the contrary in this report, this report does not address environmental considerations which may affect the site development, e.g., wetlands determinations, flora and fauna, wildlife, etc. The findings and recommendations of this report are not intended to supersede any environmental conditions which should be reflected in the site planning.

#### B. Applicability of Report

This report has been prepared in accordance with generally accepted soils engineering practices for the exclusive use of ER/UDC West Windsor, LLC for specific application to the design of the proposed stormwater management facilities. No other warranty, expressed or implied, is made.

This report may be referred to in the project specifications for general information purposes only, but should not be used as the technical specifications for the work, as it was prepared for design purposes exclusively.

### **C. Reinterpretation of Recommendations**

Change in Location or Nature of Facilities: In the event that any changes in the nature, design or location of the facilities are planned, the findings and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the findings of this report modified or verified in writing.

Changed Conditions During Construction: The analyses and recommendations submitted in this report are based in part upon the data obtained from 2 widely-spaced test borings and 28 test pit excavations performed for this study. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

Changes in State-of-the-Art: The findings and recommendations contained in this report are based upon the applicable standards of our profession at the time this report was prepared.

### **D. Use of Report by Prospective Bidders**

This soil engineering report was prepared for the project by Melick-Tully and Associates, a Division of GZA GeoEnvironmental Inc. (MTA) for design purposes and may not be sufficient to prepare an accurate bid. Contractors utilizing the information in the report should do so with the express understanding that its scope was developed to address design considerations. Prospective bidders should obtain the owner's permission to perform whatever additional explorations or data gathering they deem necessary to prepare their bid accurately.

### **E. Construction Observation**

We recommend that MTA be retained to provide on-site soils engineering services during the earthwork construction phase of the work. This is to observe compliance with the design concepts and to allow changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.