WHITESTONE
ASSOCIATES, INC.
Environmental & Geotechnical Engineers & Consultants

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
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March 4, 2021

via email

SAFSTOR REAL ESTATE CO, LLC
c/o W&A ENGINEERING
355 Oneta Street
Suite D100
Athens, Georgia 30601

Attention: Mr. Jim Burtt
Project Manager

Regarding: SWM AREA EVALUATION & ON-SITE WASTEWATER MANAGEMENT EVALUATION SERVICES
PROPOSED SELF-STORAGE FACILITY
471 ELIZABETH AVENUE
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NEW JERSEY
WHITESTONE PROJECT NO.: GJ2117698.000

Dear Mr. Burtt:

Whitestone Associates, Inc. (Whitestone) has completed a stormwater management (SWM) area evaluation and on-site wastewater management evaluation services at the above-referenced site. The results of the evaluation presented below are based on the soil conditions disclosed by the profile pits performed during Whitestone's February 2021 field investigation.

1.0 PROJECT DESCRIPTION

The subject property located at 471 Elizabeth Avenue in Franklin Township, Somerset County, New Jersey currently consists of an undeveloped lot. Based on the January 18, 2021 *Conceptual Grading, Drainage & Utility Plan* prepared by Bohler Engineering NJ, LLC (Bohler), the proposed development will include construction of a three-story, self-storage facility with new pavements, landscaping, SWM area, septic area, and utilities. The SWM facility will be located within the southern portion of the site. The septic area preliminarily is anticipated to be located within the eastern portion of the site. Final details regarding the type, bottom elevation, and size of the proposed SWM/septic facilities have not been established at the time of this report.

2.0 FIELD EXPLORATION

Whitestone's scope of services consisted of conducting an engineering evaluation of the subsurface conditions disclosed by nine profile pits (identified as SPP-1A, SPP-2A, SPP-3 through SPP-6, and offsets SPP-3A, SPP-4A, and SPP-5A). The subsurface tests extended to depths ranging from approximately five feet below ground surface (fbgs) to 8.5 fbgs. The subsurface tests were located in the field using normal taping procedures and estimated right angles from existing features and are presumed

to be accurate within a few feet. Upon completion, the test locations were backfilled to existing surface levels using soils generated during excavation of the test pits. Soil profile pits and associated infiltration testing performed for the proposed septic system were witnessed by a representative of the Franklin Township Health Department.

3.0 SWM AREA TEST RESULTS

General: The SWM area investigation included four profile pits (identified as SPP-4, SPP-5, and associated offsets SPP-4A and SPP-5A for basin flood testing) performed within the anticipated location of the SWM area. The test locations are shown on the *Test Location Plan* included as Figure 1. Details of the subsurface materials encountered are presented on the *Records of Subsurface Exploration* presented in Appendix A.

Estimated Seasonal High Groundwater Levels: The methods used in determining the estimated seasonal high groundwater (ESHGW) level include evaluating the soil morphology within a test location and identifying irregular spots or blotches of different colors or minerals unlike that of the surrounding soils (mottles). Mottling is the result of the oxidation of minerals within a soil structure as a water level slowly fluctuates.

Groundwater and indications of seasonal high groundwater levels were encountered within the profile pits performed at the depths/elevations indicated in the *Records of Subsurface Exploration.* Groundwater conditions likely will fluctuate seasonally and following periods of precipitation.

Infiltration Testing: Basin flood tests were conducted within the weathered rock/bedrock strata encountered at profile pits SPP-4A and SPP-5A. The basin flood tests performed within the profile pits were conducted in general accordance with the *New Jersey Stormwater Best Management Practices Manual* (BMP Manual). The results of the in-situ testing indicated that basin flood tests did not drain the required 12 inches within 24 hours of filling. Therefore, per the BMP Manual, the limiting zone is considered to be a massive rock substratum and a infiltration rate cannot be assigned. Detailed in-situ infiltration test results are available in Appendix C.

Additionally, representative samples within profile pits SPP-4 and SPP-5 were subjected to tube permeameter analysis as detailed in *New Jersey Stormwater Best Practices Manual.* Laboratory tube permeameter testing resulted in a infiltration rate of less than 0.2 iph. Individual tube permeameter test results are provided in Appendix B.

4.0 SEPTIC AREA TEST RESULTS

General: The septic area investigation included four profile pits (identified as SPP-1A, SPP-2A, SPP-3 and associated offset SPP-3A for basin flood testing) performed within the potential locations of the septic disposal bed areas. The test locations are shown on the *Test Location Plan* included as Figure 1. Details of the subsurface materials encountered are presented on the *Records of Subsurface Exploration* presented in Appendix A.

Estimated Seasonal High Groundwater Levels: Groundwater and indications of seasonal high groundwater levels were encountered within the profile pits performed at the depths/elevations indicated in the *Records of Subsurface Exploration.* Groundwater conditions likely will fluctuate seasonally and following periods of precipitation.

Infiltration Testing: A pit-bailing test was conducted within the weathered rock strata encountered at profile pit SPP-2A at a depth of approximately eight fbgs. The pit-bailing test was conducted in general accordance with the *Standards for Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A)* and was witnessed by a Township of Franklin Health Department representative. The results of the pit-bailing test indicated a permeability rate (K) of approximately 3.4 inches per hour.

Additionally, a basin flood test was conducted at profile pit SPP-3A and tube permeameter testing was conducted at profile pit SPP-3. The basin flood test was conducted within the weathered rock strata encountered within SPP-3A. The basin flood test was conducted in general accordance with the *Standards for Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A)*. The results of the in-situ testing indicated that basin flood test did not drain the required 12 inches within 24 hours of filling. Therefore, the limiting zone is considered to be a massive rock substratum and a permeability rate cannot be assigned. Detailed in-situ permeability test results are available in Appendix C. The laboratory tube permeameter testing conducted for SPP-3 resulted in a permeability rate of less than 0.2 iph. Individual tube permeameter test results are provided in Appendix B.

5.0 CLOSING

Whitestone appreciates the opportunity to be of service to SAFStor Real Estate Co, LLC and W&A Engineering and trusts that this information will be helpful for evaluating the proposed development of this property. Please contact us at (908) 668-7777 to further discuss these findings.

Sincerely,

WHITESTONE ASSOCIATES, INC.

Mudar Khantamr, P.E.
Project Manager

Kevin A. Feath, P.E.
Associate

MK/pwd L:\Job Folders\2021\2117698GJ\Reports and Submittals\17698 SWM&Septic.docx
Enclosures
Copy: Kyle McKenna, P.E., Bohler Engineering NJ, LLC
Laurence W. Keller, P.E., Whitestone Associates, Inc.

WHITESTONE ASSOCIATES, INC.

FIGURE 1
Test Location Plan

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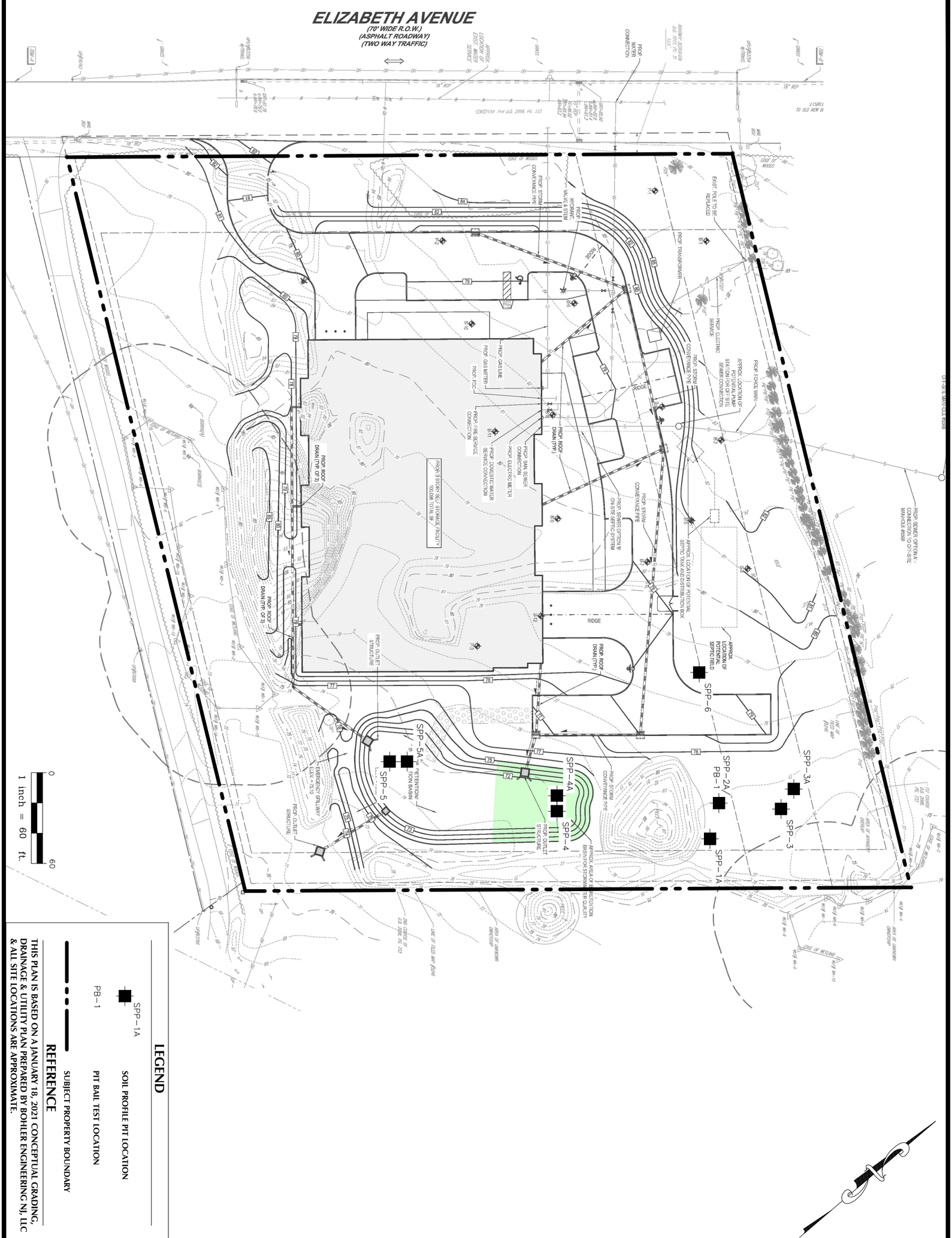

LEGEND

- SPP-1A — SOIL PROFILE PIT LOCATION
- PB-1 — PIT BAIL TEST LOCATION
- SUBJECT PROPERTY BOUNDARY

REFERENCE

THIS PLAN IS BASED ON A JANUARY 18, 2021 CONCEPTUAL GRADING, DRAINAGE & UTILITY PLAN PREPARED BY BOHLER ENGINEERING NJ, LLC & ALL SITE LOCATIONS ARE APPROXIMATE.

PROJECT #:	GJ2117698.000
DESIGNED BY:	GR
DATE:	3/3/21
SCALE:	1" = 60'
PROJ. MGR.:	KAF
FIGURE:	1

DRAWING TITLE:
TEST LOCATION PLAN

CLIENT:
SAFSTOR REAL ESTATE CO, LLC

PROJECT:
PROPOSED SELF-STORAGE FACILITY
471 ELIZABETH AVENUE
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

WHITESTONE ASSOCIATES, INC.
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WHITESTONE ASSOCIATES, INC.

APPENDIX A
Records of Subsurface Exploration

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-1A

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

Surface Elevation:	± 77.0 feet	**Date Started:**	2/8/2021	**Water Depth (feet bgs) | Elevation (feet)**		**Estimated Seasonal High Groundwater Depth (feet bgs) | Elevation (feet)**
Termination Depth:	8.5 feet bgs	**Date Completed:**	2/8/2021			
Proposed Location:	Septic	**Logged By:**	CN	**During:**	6.0 | 71.0	
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	--- | ---	**At Completion:** 4.0 | 73.0
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	--- | ---	

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 3			1.0 / 2.0 / 3.0	0 - 3	FILL	30" Asphalt Millings	Water Seeping in All Sidewalls 2"/10 Minutes
3 - 6			4.0 / 5.0 / 6.0	3 - 6	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Moist to Wet; Friable; No Roots; >15MM Mottling Starting at 4.0 fbgs; Clear Boundary	Mottling @ 4.0 fbgs to 8.5 fbgs Water Sitting on Weathered Rock
6 - 8.5			7.0 / 8.0	6 - 8.5	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling; Clear Boundary	
			9.0 / 10.0 / 11.0 / 12.0 / 13.0 / 14.0 / 15.0			Soil Profile Pit SPP-1A Terminated at a Depth of 8.5 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-2A

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

				Water Depth (feet bgs)	Elevation (feet)	Estimated Seasonal High Groundwater Depth (feet bgs)	Elevation (feet)
Surface Elevation:	± 77.0 feet	**Date Started:**	2/6/2021				
Termination Depth:	8.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	Septic	**Logged By:**	CN	**During:**	5.5 | 71.5		
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	--- | ---	**At Completion:**	4.0 | 73.0
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	--- | ---		

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 2			1.0	0 - 2	FILL	24" Asphalt Millings	Water Seeping in All Sidewalls 2"/10 Minutes 0.0 fbgs to 5.0 fbgs
			2.0				
2 - 5.5			3.0	2 - 5.5	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Moist to Wet; Friable; No Roots; >15MM Mottling at 4.0 fbgs; Clear Boundary	
			4.0				Mottling @ 4.0 fbgs
			5.0				Water Sitting on Weathered Rock
5.5 - 8			6.0	5.5 - 8	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; No Mottling; Clear Boundary	
			7.0				
			8.0				
			9.0			Soil Profile Pit SPP-2A Terminated at a Depth of 8.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	SPP-2A Used for Pit Bail Test (PB-1)
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

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WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-3

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

				Water Depth (feet bgs)	Elevation (feet)	Estimated Seasonal High Groundwater Depth (feet bgs)	Elevation (feet)
Surface Elevation:	± 77.0 feet	**Date Started:**	2/6/2021				
Termination Depth:	6.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	Septic	**Logged By:**	CN	**During:**	4.0 / 73.0		
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	--- / ---	**At Completion:**	3.8 / 73.2
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	--- / ---		

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 2.5			1.0	0 - 2.5	FILL	30" Asphalt Millings	
			2.0				
2.5 - 4	S-1	BAG	3.0	2.5 - 4	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Wet; Friable; No Roots; >15MM Mottling at 3.8 fbgs; Clear Boundary	Bag/Tubes Taken @ 3.0 fbgs Water Sitting on Weathered Rock
			4.0				
4 - 6			5.0	4 - 7	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling; Clear Boundary	
			6.0				
			7.0			Soil Profile Pit SPP-3 Terminated at a Depth of 6.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	
			8.0				
			9.0				
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

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WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-3A

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

				Water Depth (feet bgs)	Elevation (feet)	Estimated Seasonal High Groundwater Depth (feet bgs)	Elevation (feet)
Surface Elevation:	± 77.0 feet	**Date Started:**	2/6/2021				
Termination Depth:	6.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	Septic	**Logged By:**	CN	**During:**	4.0 / 73.0		
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	--- / ---	**At Completion:**	3.8 / 73.2
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	--- / ---		

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 2.5			1.0	0 - 2.5	FILL	30" Asphalt Millings	
			2.0				
2.5 - 4	S-1	BAG	3.0	2.5 - 4	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Wet; Friable; No Roots; >15MM Mottling at 3.8 fbgs; Clear Boundary	Bag/Tubes Taken @ 3.0 fbgs Water Sitting on Weathered Rock
			4.0				
4 - 6			5.0	4 - 7	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling; Clear Boundary	
			6.0				
			7.0			Soil Profile Pit SPP-3A Terminated at a Depth of 6.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	
			8.0				
			9.0				
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

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WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-4

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

Surface Elevation:	± 75.0 feet	**Date Started:**	2/6/2021		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	6.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	Proposed SWM	**Logged By:**	CN	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	---	---	**At Completion:** 3.0 / 72.0
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH (feet)		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type					
			0.0				
0 - 1			1.0	0 - 1	FILL	12" to 18" Asphalt Millings	
1 - 2			2.0	1 - 2	TOPSOIL	6" to 12" Topsoil	
2 - 4	S-1	BAG	4.0	2 - 4	GLACIAL DEPOSITS	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Wet; Friable; Sticky; No Roots; >15MM Mottling at 3.0 fbgs; Clear Boundary	Tubes/Bags Taken @ 2.0 fbgs >15MM Mottling 3.0 fbgs to 6.0 fbgs
4 - 6			6.0	4 - 6	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling	
			7.0			Soil Profile Pit SPP-4 Terminated at a Depth of 6.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	
			8.0				
			9.0				
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

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WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-4A

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

Surface Elevation:	± 75.0 feet	**Date Started:**	2/6/2021		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	6.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	Proposed SWM	**Logged By:**	CN	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	---	---	**At Completion:** 3.0 / 72.0
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 1			1.0	0 - 1	FILL	12" to 18" Asphalt Millings	
1 - 2			2.0	1 - 2	TOPSOIL	6" to 12" Topsoil	
2 - 4	S-1	BAG	4.0	2 - 4	GLACIAL DEPOSITS	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Wet; Friable; Sticky; No Roots; >15MM Mottling at 3.0 fbgs; Clear Boundary	Tubes/Bags Taken @ 2.0 fbgs >15MM Mottling 3.0 fbgs to 6.0 fbgs
4 - 6			6.0	4 - 6	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling	
			7.0			Soil Profile Pit SPP-4A Terminated at a Depth of 6.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	
			8.0				
			9.0				
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

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WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-5

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

Surface Elevation:	± 74.5 feet	**Date Started:**	2/6/2021		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	5.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	SWM	**Logged By:**	CN	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	---	---	**At Completion:** 2.5 / 72.0
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 1.5			1.0	0 - 1.5	FILL	18" Asphalt Millings	
1.5 - 3	S-1	BAG	2.0 3.0	1.5 - 3	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Moist; Friable; Sticky; No Roots; >15MM Mottling @ 2.5 fbgs; Clear Boundary	Tubes/Bag Taken @ 2.0 fbgs Mottling from 2.5 fbgs to 5.0 fbgs
3 - 5			4.0 5.0	3 - 5	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling	
			6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0			Soil Profile Pit SPP-5 Terminated at a Depth of 5.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-5A

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

Surface Elevation:	± 74.5 feet	**Date Started:**	2/6/2021		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs)** / **Elevation (feet)**
Termination Depth:	5.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	SWM	**Logged By:**	CN	**During:**	NE	---	
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	---	---	**At Completion:** 2.5 / 72.0
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH (feet)		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type					
			0.0				
0 - 1.5			1.0	0 - 1.5	FILL	18" Asphalt Millings	
1.5 - 3	S-1	BAG	2.0 3.0	1.5 - 3	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Moist; Friable; Sticky; No Roots; >15MM Mottling @ 2.5 fbgs; Clear Boundary	Tubes/Bag Taken @ 2.0 fbgs Mottling from 2.5 fbgs to 5.0 fbgs
3 - 5			4.0 5.0	3 - 5	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling	
			6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0			Soil Profile Pit SPP-5A Terminated at a Depth of 5.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

RECORD OF SUBSURFACE EXPLORATION

Soil Profile Pit No.: SPP-6

Project:	Proposed Self-Storage Facility	**WAI Project No.:**	GJ2117698.000
Location:	471 Elizabeth Avenue; Franklin Township, Somerset County, New Jersey	**Client:**	SAFStor Real Estate Co, LLC

Surface Elevation:	± 78.5 feet	**Date Started:**	2/6/2021		**Water Depth (feet bgs)**	**Elevation (feet)**	**Estimated Seasonal High Groundwater Depth (feet bgs) / Elevation (feet)**
Termination Depth:	5.0 feet bgs	**Date Completed:**	2/6/2021				
Proposed Location:	Septic	**Logged By:**	CN	**During:**	3.0	75.5	
Excavating Method:	Test Pit Excavation	**Contractor:**	LNR	**At Completion:**	---	---	**At Completion:** 3.0 / 75.5
Test Method:	Visual Observation	**Rig Type:**	PC88MR	**24 Hours:**	---	---	

SAMPLE INFORMATION			DEPTH		HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet				
			0.0				
0 - 1.5			1.0	0 - 1.5	FILL	18" Asphalt Millings	
1.5 - 2.2			2.0	1.5 - 2.2	TOPSOIL	8" Topsoil	
2.2 - 3	S-1	BAG	3.0	2.2 - 3	RESIDUAL	Reddish-Brown (5YR 5/4) CLAY LOAM; 10% Gravel; Moderate, Medium Blocky Structure; Wet; Friable; No Roots; No Mottling; Clear Boundary	Tubes/Bags Taken @ 2.5 fbgs
3 - 5			4.0	3 - 5	WEATHERED ROCK	Dark Reddish-Brown (5YR 4/3) Fractured WEATHERED SHALE; Strong, Coarse Structure; Moist; Very Hard; No Roots; Mottling	Mottling from 3.0 fbgs to 5.0 fbgs
			5.0				
			6.0			Soil Profile Pit SPP-6 Terminated at a Depth of 5.0 Feet Below Ground Surface Due to Refusal on Weathered Rock/Bedrock	
			7.0				
			8.0				
			9.0				
			10.0				
			11.0				
			12.0				
			13.0				
			14.0				
			15.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE ASSOCIATES, INC.

APPENDIX B
Laboratory Test Results

Tube Permeameter Test Data

Job Number: GJ2117698.000
Project: Proposed Self-Storage Facility
Client: Safstor Real Estate Co, LLC
Lab Tech: T. Jovanov

Sample ID: **Profile Pit No.:** SPP-3 **Sample No.:** T-1 **Depth:** 3.0'

COUNTY/MUNICIPALITY Franklin Twp, Somerset Co BLOCK _____ LOT _____

1. Test Number 1 Replicate (letter) A Date Collected 2/6/2021

2. Material Tested: _____ Fill _____ Test in Native Soil

3. Type of Sample: X Undisturbed _____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
   Length of Sample, L, in inches 3.50

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

   Wt. of Tube Containing Sample _____
   Wt. of Empty Tube _____

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.30

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: X No _____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1	5.00
At the End of Each Test Interval, H2	4.75

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		92.00
		96.00
		92.00

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 93.33

K (in/hr) = 0.12 **Classification:** **K0**

13. Defects in the Sample (Check appropriate items):

_____ None

_____ Soil/Tube Contact _____ Large Gravel _____ Large Roots

_____ Dry Soil _____ Smearing _____ Compaction

_____ Other - Specify _____

Tube Permeameter Test Data

Job Number: GJ2117698.000
Project: Proposed Self-Storage Facility
Client: Safstor Real Estate Co, LLC
Lab Tech: T. Jovanov

Sample ID: **Profile Pit No.:** SPP-3 **Sample No.:** T-1 **Depth:** 3.0'

COUNTY/MUNICIPALITY Franklin Twp, Somerset Co BLOCK _____ LOT _____

1. Test Number 1 Replicate (letter) B Date Collected 2/6/2021

2. Material Tested: _____ Fill _____ Test in Native Soil

3. Type of Sample: X Undisturbed _____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
   Length of Sample, L, in inches 3.25

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

   Wt. of Tube Containing Sample _____
   Wt. of Empty Tube _____

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 94.07

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: X No _____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1	5.00
At the End of Each Test Interval, H2	4.99

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		240.00

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 240.00

K (in/hr) = 0.00 **Classification:** **K0**

13. Defects in the Sample (Check appropriate items):

_____ None

_____ Soil/Tube Contact _____Large Gravel _____ Large Roots

_____ Dry Soil _____Smearing _____ Compaction

_____ Other - Specify _____

Tube Permeameter Test Data

Job Number: GJ2117698.000
Project: Proposed Self-Storage Facility
Client: Safstor Real Estate Co, LLC
Lab Tech: T. Jovanov

Sample ID: **Profile Pit No.:** SPP-4 **Sample No.:** T-1 **Depth:** 2.0'

COUNTY/MUNICIPALITY Franklin Twp, Somerset Co BLOCK _____ LOT _____

1. Test Number 1 Replicate (letter) A Date Collected 2/6/2021

2. Material Tested: _____ Fill _____ Test in Native Soil

3. Type of Sample: X Undisturbed _____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
   Length of Sample, L, in inches 3.50

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

   Wt. of Tube Containing Sample _____
   Wt. of Empty Tube _____

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.30

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: X No _____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 5.00
    At the End of Each Test Interval, H2 4.75

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		72.00
		73.00
		69.00

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 71.33

    K (in/hr) = 0.15 **Classification:** **K0**

13. Defects in the Sample (Check appropriate items):

_____ None

_____ Soil/Tube Contact _____Large Gravel _____ Large Roots

_____ Dry Soil _____Smearing _____ Compaction

_____ Other - Specify _____

Tube Permeameter Test Data

Job Number: GJ2117698.000
Project: Proposed Self-Storage Facility
Client: Safstor Real Estate Co, LLC
Lab Tech: T. Jovanov

Sample ID: **Profile Pit No.:** SPP-4 **Sample No.:** T-1 **Depth:** 2.0'

COUNTY/MUNICIPALITY Franklin Twp, Somerset Co BLOCK _____ LOT _____

1. Test Number 1 Replicate (letter) B Date Collected 2/6/2021

2. Material Tested: _____ Fill _____ Test in Native Soil

3. Type of Sample: X Undisturbed _____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
   Length of Sample, L, in inches 3.25

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

   Wt. of Tube Containing Sample _____
   Wt. of Empty Tube _____

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 94.07

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: X No _____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1	4.50
At the End of Each Test Interval, H2	4.49

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		240.00

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 240.00

K (in/hr) = 0.00 **Classification:** **K0**

13. Defects in the Sample (Check appropriate items):

_____ None

_____ Soil/Tube Contact _____ Large Gravel _____ Large Roots

_____ Dry Soil _____ Smearing _____ Compaction

_____ Other - Specify _____

Tube Permeameter Test Data

Job Number: GJ2117698.000
Project: Proposed Self-Storage Facility
Client: Safstor Real Estate Co, LLC
Lab Tech: T. Jovanov

Sample ID: **Profile Pit No.:** SPP-5 **Sample No.:** T-1 **Depth:** 3.0'

COUNTY/MUNICIPALITY Franklin Twp, Somerset Co BLOCK _____ LOT _____

1. Test Number 1 Replicate (letter) A Date Collected 2/6/2021

2. Material Tested: _____ Fill _____ Test in Native Soil

3. Type of Sample: X Undisturbed _____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
   Length of Sample, L, in inches 3.50

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

   Wt. of Tube Containing Sample _____
   Wt. of Empty Tube _____

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.30

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: X No _____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 5.00
    At the End of Each Test Interval, H2 4.99

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		240.00

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 240.00

    K (in/hr) = 0.00 **Classification:** **K0**

13. Defects in the Sample (Check appropriate items):

_____ None

_____ Soil/Tube Contact _____Large Gravel _____ Large Roots

_____ Dry Soil _____Smearing _____ Compaction

_____ Other - Specify _____

Tube Permeameter Test Data

Job Number: GJ2117698.000
Project: Proposed Self-Storage Facility
Client: Safstor Real Estate Co, LLC
Lab Tech: T. Jovanov

Sample ID: **Profile Pit No.:** SPP-5 **Sample No.:** T-1 **Depth:** 3.0'

COUNTY/MUNICIPALITY Franklin Twp, Somerset Co BLOCK _____ LOT _____

1. Test Number 1 Replicate (letter) B Date Collected 2/6/2021

2. Material Tested: _____ Fill _____ Test in Native Soil

3. Type of Sample: X Undisturbed _____ Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
   Length of Sample, L, in inches 2.25

5. Bulk Density Determination (Disturbed Samples Only): N/A

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams 0.00

   Wt. of Tube Containing Sample _____
   Wt. of Empty Tube _____

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 65.12

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 1.2

9. Standpipe Used: X No _____ Yes, Indicate Internal Radius, cm. N/A

10. Height of Water Level Above Rim of Test Basin, in inches:

At the Beginning of Each Test Interval, H1	5.00
At the End of Each Test Interval, H2	4.99

11. Rate of Water Level Drop (Add additional lines if needed):

Time, Start of Test Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
		240.00

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 240.00

K (in/hr) = 0.00 **Classification:** **K0**

13. Defects in the Sample (Check appropriate items):

_____ None

_____ Soil/Tube Contact _____Large Gravel _____ Large Roots

_____ Dry Soil _____Smearing _____ Compaction

_____ Other - Specify _____

WHITESTONE ASSOCIATES, INC.

APPENDIX C
Basin Flood Test Data

WHITESTONE ASSOCIATES, INC.

BASIN FLOOD TEST DATA

Client:	SAFStor Real Estate Co, LLC	**Basin No.:**	SPP-3A
Project:	Proposed Self-Storage Facility	**Date:**	2/8/21 - 2/10/21
Location:	471 Elizabeth Ave., Franklin Twp., NJ	**Weather:**	Overcast, Light Snow, 20-35°F
File No.	GJ2117698.000	**Field Engineer:**	C. Naugle
Surf. Elev.	± 77.0	**Test Depth/Elev.:**	5.0 72.0

Reading No.	Date	Time	Water Level Reading		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
			Depth (inches)	Water Surface (IBGS)			
1	2/8/2021	1:15 PM	12.0	42.0	---	---	---
2	2/8/2021	3:15 PM	13.0	41.0	1.0	2.0	---
3	2/9/2021	8:15 AM	14.0	40.0	2.0	19.0	---
4	2/9/2021	10:15 AM	14.0	40.0	2.0	21.0	---
5	2/9/2021	12:15 PM	15.0	39.0	3.0	23.0	---
6	2/9/2021	1:15 PM	15.0	39.0	3.0	24.0	---

BFT: basin flood test
IBGS: inches below ground surface

WHITESTONE ASSOCIATES, INC.

BASIN FLOOD TEST DATA

Client:	SAFStor Real Estate Co, LLC	**Basin No.:**	SPP-4A
Project:	Proposed Self-Storage Facility	**Date:**	2/8/21 - 2/10/21
Location:	471 Elizabeth Ave., Franklin Twp., NJ	**Weather:**	Overcast, Light Snow, 20-35°F
File No.	GJ2117698.000	**Field Engineer:**	C. Naugle
Surf. Elev.	± 75.0	**Test Depth/Elev.:**	4.0 71.0

Reading No.	Date	Time	Water Level Reading		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
			Depth (inches)	Water Surface (IBGS)			
1	2/8/2021	1:15 PM	12.0	32.0	---	---	---
2	2/8/2021	3:15 PM	12.0	32.0	0.0	2.0	---
3	2/9/2021	8:15 AM	15.5	28.5	3.5	19.0	---
4	2/9/2021	10:15 AM	15.5	28.5	3.5	21.0	---
5	2/9/2021	12:15 PM	15.5	28.5	3.5	23.0	---
6	2/9/2021	1:15 PM	15.5	28.5	3.5	24.0	---

BFT: basin flood test
IBGS: inches below ground surface

WHITESTONE ASSOCIATES, INC.

BASIN FLOOD TEST DATA

Client:	SAFStor Real Estate Co, LLC	**Basin No.:**	SPP-5A
Project:	Proposed Self-Storage Facility	**Date:**	2/8/21 - 2/10/21
Location:	471 Elizabeth Ave., Franklin Twp., NJ	**Weather:**	Overcast, Light Snow, 20-35°F
File No.	GJ2117698.000	**Field Engineer:**	C. Naugle
Surf. Elev.	± 75.0	**Test Depth/Elev.:**	4.0 71.0

Reading No.	Date	Time	Water Level Reading		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
			Depth (inches)	Water Surface (IBGS)			
1	2/8/2021	1:15 PM	12.0	35.0	---	---	---
2	2/8/2021	3:15 PM	12.0	35.0	0.0	2.0	---
3	2/9/2021	8:15 AM	17.0	30.0	5.0	19.0	---
4	2/9/2021	10:15 AM	17.0	30.0	5.0	21.0	---
5	2/9/2021	12:15 PM	17.5	29.5	5.5	23.0	---
6	2/9/2021	1:15 PM	18.0	29.0	6.0	24.0	---

BFT: basin flood test
IBGS: inches below ground surface

WHITESTONE ASSOCIATES, INC.

APPENDIX D
Supplemental Information (USCS, Terms & Symbols)

WHITESTONE ASSOCIATES, INC.
Environmental & Geotechnical Engineers & Consultants

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
908.668.7777
whitestoneassoc.com

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS*
Sand and/or Gravel

RELATIVE DENSITY

LOOSE. ..... 0% TO 40%
MEDIUM DENSE.... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY*
Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... ..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.*

L:\Geotechnical Forms and References\Reports\USCSTRMSSYM NJ.docx

Other Office Locations:

CHALFONT, PA 215.712.2700
SOUTHBOROUGH, MA 508.485.0755
ROCKY HILL, CT 860.726.7889
WALL, NJ 732.592.2101
PHILADELPHIA, PA 215.848.2323

WHITESTONE ASSOCIATES, INC.
Environmental & Geotechnical Engineers & Consultants

30 INDEPENDENCE BOULEVARD
SUITE 250
WARREN, NJ 07059
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GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
Qu: Unconfined compressive strength, TSF.
Qp: Penetrometer value, unconfined compressive strength, TSF.
Mc: Moisture content, %.
LL: Liquid limit, %.
PI: Plasticity index, %.
δd: Natural dry density, PCF.
▼: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

NE: Not Encountered (Groundwater was not encountered).
SS: Split-Spoon - 1 ⅜" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
OB: Diamond Bit.
CB: Carbide Bit
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

Term (Non-Cohesive Soils)	Standard Penetration Resistance
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Term (Cohesive Soils)	Qu (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

Other Office Locations:

CHALFONT, PA 215.712.2700
SOUTHBOROUGH, MA 508.485.0755
ROCKY HILL, CT 860.726.7889
WALL, NJ 732.592.2101
PHILADELPHIA, PA 215.848.2323