

March 27, 2018

via email

MADISON MARQUETTE REALTY SERVICES

300 Cookman Avenue, Suite 1 Asbury Park, New Jersey 07712

Attention:	Mr. John Muly
	Vice President, Project Management

Regarding: STORMWATER MANAGEMENT AREA EVALUATION PROPOSED MIXED USE DEVELOPMENT N.J.S.H. ROUTE 206 & GEORGETOWN-FRANKLIN TURNPIKE MONTGOMERY TOWNSHIP, SOMERSET COUNTY, NEW JERSEY WHITESTONE PROJECT NO.: GP1815322.000

Dear Mr. Muly:

Whitestone Associates, Inc. (Whitestone) is pleased to submit this *Stormwater Management* (SWM) *Area Evaluation* report in support of the proposed mixed-use development referenced above. Whitestone previously performed subsurface investigations and evaluations at the proposed site, and the data presented in the May 1, 2006 *Stormwater Basin Subsurface Evaluation Services* in particular was utilized for this report.

Additionally, this preliminary SWM evaluation was based on the June 3, 2016 (last revised January 2, 2018) *Overall Drainage Plan* prepared by Bohler and was performed in accordance with February 16, 2018 proposal to Madison Marquette Realty Services.

PROJECT DESCRIPTION

The site is located southwest of the intersection of New Jersey State Highway Route 206 and Georgetown-Franklin Turnpike in Montgomery Township, Somerset County, New Jersey. At the time of the subsurface evaluation, the subject site consisted of a mostly undeveloped parcel, with areas of remnant pavement situated between brush and grass vegetation.

The proposed site development relative to this preliminary evaluation includes a three above-ground SWM facilities located within the northern, eastern, and southern portions of the site. Based on a review of the aforementioned *Overall Drainage Plan*, the proposed bottom elevation for the northern SWM facility is approximately 140 feet above the North American Vertical Datum-1988 (NAVD88); the proposed bottom elevation for the eastern SWM facility is approximately 145 feet above NAVD88; and the proposed bottom elevation for the southern SWM facility ranges between approximately 123 feet above NAVD88 and 129 feet above NAVD88. These elevations ranged between two feet above and eight feet below proposed existing grades.

	Other Office Locations:							
WARREN, NJ	Southborough, MA	ROCKY HILL, CT	WALL, NJ	Sterling, VA	Evergreen, CO			
908.668.7777	508.485.0755	860.726.7889	732.592.2101	703.464.5858	303.670.6905			



SUMMARY OF FINDINGS AND RECOMMENDATIONS

The field investigation included the evaluation of 10 test pits (identified as STP-1 through STP-10) that extended to depths ranging between approximately 15 feet below ground surface (fbgs) to 18 fbgs. In addition, ten *in-situ* infiltration tests (identified as P-1 through P-10) were performed at the proposed bottom of basin elevations. The investigation and infiltration testing were performed in general accordance with standards presented in the New Jersey Department of Environmental Protection (NJDEP) *Stormwater Best Management Practices Manual* (BMP Manual). The testing locations are shown on the *Test Location Plan* included as Figure 1. Detailed soil descriptions are included on the *Records of Subsurface Exploration* included as Appendix A. In addition, the previously performed test pit logs are included in Appendix A.

Subsurface Soil Profile: The soil profile disclosed by the test pits included approximately one inch to eight inches of surficial topsoil/ploughed horizon underlain by residual materials (STP-1 through STP-6), alluvial materials (STP-7 and STP-8), and existing fill materials (STP-9 and STP-10). The existing fill materials encountered generally consisted of sandy clay loam with lesser amounts of asphalt, concrete, and gravel fragments. Underlying the existing fill materials were alluvial soils consisting of sandy clay loam with up to approximately 10 percent gravel content. The residual soils consisted of silty clay loam and clay loam with varying amounts of gravel. Weathered rock (shale) was encountered within two locations (STP-7 and STP-8) at depths of 16.5 fbgs and 12.5 fbgs, respectively. These depths correspond to approximate elevations of 134.5 feet above NAVD88 and 135.5 feet above NAVD88, respectively.

Groundwater: Static groundwater was encountered in approximately half of the test pits, with all of the test locations that encountered groundwater located within the areas of lower elevation, southern portion of the site. Groundwater was encountered at depths ranging between 13.5 fbgs and 16.0 fbgs, corresponding to approximate elevations ranging between 114.5 feet above NAVD88 and 116.0 feet above NAVD88. Indications of estimated seasonal high groundwater levels, where encountered, are noted on the *Records of Subsurface Exploration*. In addition, impeded drainage was noted above the very stiff silty clay materials in STP-1 and STP-2 at approximate depths of four fbgs and five fbgs, respectively.

Infiltration Test Results & Conclusion: A total of ten *in-situ* infiltration tests were performed within the proposed SWM facility at depths corresponding with the proposed bottom elevation of basins (as shown on the aforementioned *Overall Drainage Plan*. Detailed infiltration test results are included in Appendix B.

The results of the investigation and infiltration testing (including the results from the 2006 investigation) indicated that the site soils are relatively impermeable and not conducive to infiltration design.

Whitestone's geotechnical division appreciates the opportunity to be of service to Madison Marquette Realty Services. Please contact us at (215) 712-2700 with any questions regarding this supplemental report.

Sincerely,

WHITESTONE ASSOCIATES, INC.

James M. Morgan

Senior Project Manager

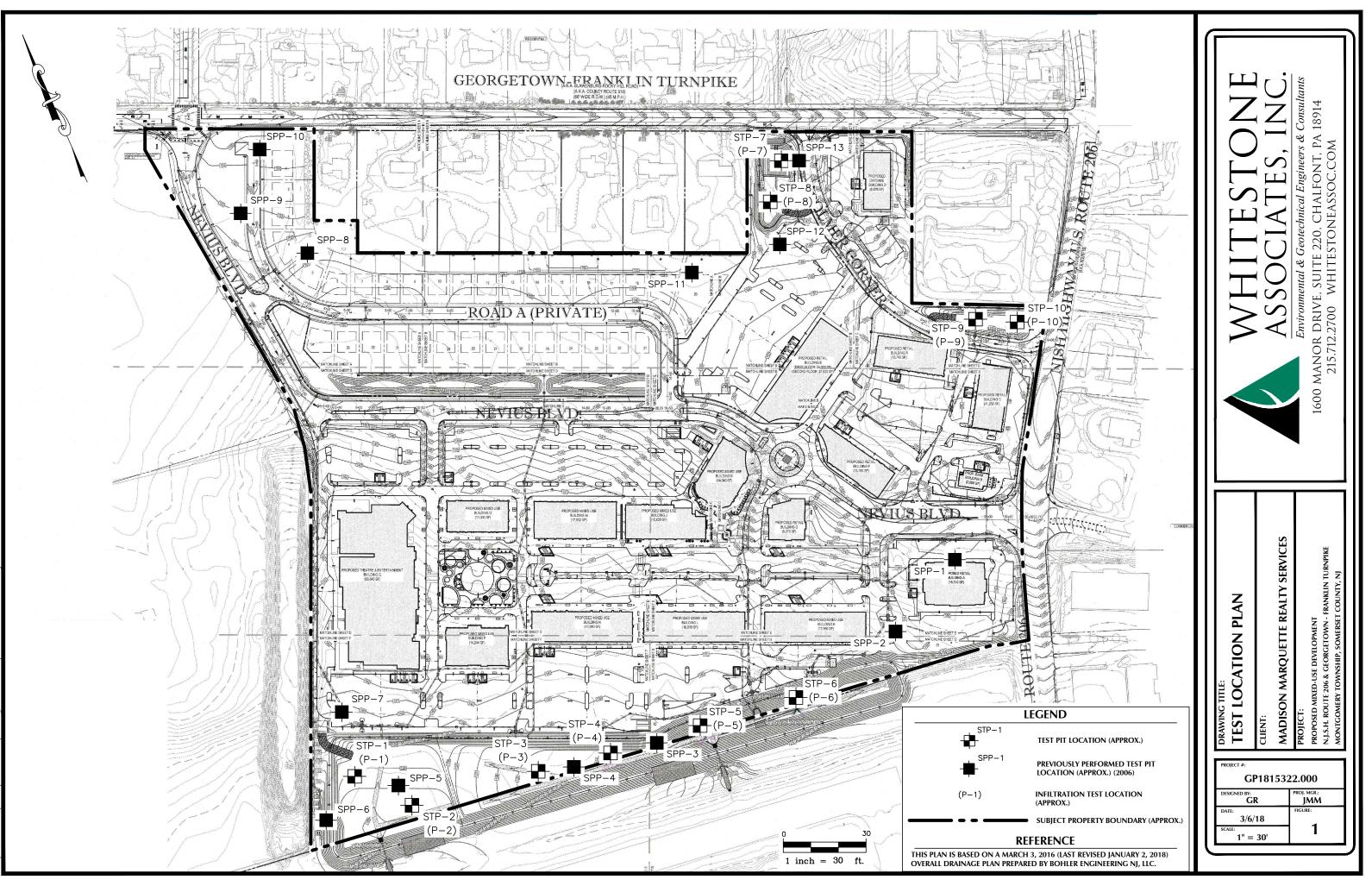
Laurence W. Keller, P.E. Principal, Geotechnical Services

CAW/kp M:\Job Folders\2018\1815322GP\Reports and Submittals\15322 PreSWM.docx Enclosures Copy: Bradford A. Bohler, P.E., Bohler Engineering NJ, LLC

ENVIRONMENTAL & GEOTECHNICAL ENGINEERS & CONSULTANTS



FIGURE 1 Test Location Plan





APPENDIX A Records of Subsurface Exploration



Soil Profile Pit No.: SPP-1

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location: R		al Development	WAI Project No.: V	VJ05-8098
Recention: R	oute 206 and Route 518; Mont	gomery, Somerset, NJ	Client: B	ohler Engineering, P.C. (N.
burface Elevation:	146.00 feet msl	Date Started: 10/03/05	Water	Estimated Seasonal Hig
ermination Depth:	12.0 feet bgs	Date Completed: 10/03/05	Depths/Elevations	Groundwater Depths/Elevations
roposed Location:	SWM	Logged By: P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/Test Meth	nod: Test Pit Excavation/	Contractor: Carroccia	While Excavating: NE	ESHGW: NE
-	Visual Observation	Equipment: Deere 310G	8 Hours: NE	
SAMPLE DEF NUMBER (fe	PTH	DESCRIPTION OF MATERL (Classification)	ALS	REMARKS
0.0 - (T				
S-1 @ 3.0' 0.75 (Bag) (1		/6) Silt Loam; 10% Gravel, 2% Cobble y (10 YR 7/1) and Brownish-Yellow (1	s; Strong, Angular Blocky Structure; 0 YR 6/8) Mottles	-
S-2 @ 4.0' 3.9 - (Bag) (2	2. 4.7 Red (2.5 YR 5/8) Silty Cla Moist; Firm	y Loam; 5% Gravel, 2% Cobbles; Mod	lerate, Angular Blocky Structure;	– Unable to Obtain Tube Sample
S-3 @ 6.0' 4.7 - (Bag) (3	12.0 Dark Red (2.5 YR 3/6) Sil	ty Clay; Moist; Friable		



Soil Profile Pit No.: SPP-2

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Project:	Propose	d Commercial/Residenti	al Development		WAI Project No.:	WJ05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somer	set, NJ	Client:	Bohler Engineering, P.C. (NJ)
Surface Eleva	tion:	139.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal High
Termination I	Depth:	13.0 feet bgs	Date Completed	l: 10/03/05	Depths/Elevations	Groundwater Depths/Elevations
Proposed Loc	ation:	SE Parcel	Logged By:	P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: NE	ESHGW: NE
	•	Visual Observation	Equipment:	Deere 310G	8 Hours: NE	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			PTION OF MATERIAI (Classification)	LS	REMARKS
	0.0 - 1.5 (Ploughed)	Brown Silt Loam, Moderate	e Medium Subang	ular Blocky Structure,	Moist	
S-1 @ 5.0' (Tube)	1.5 - 9.0 (2)			n; Coarse, Angular Blo	cky Structure; Moist; Friable	 25% Shale Few Fine Roots to 3.9 fbgs
S-2 @ 5.5' (Bag)	9.0 - 13.0	As Above, Increased Shale				60% Coarse to Fine Shale
		Soil Profile Pit SPP-2 Term				



Soil Profile Pit No.: SPP-3

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Project:	Propose	ed Commercial/Residenti	al Development		WAI Project No.: W	J05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somerset	, NJ	Client: Bo	hler Engineering, P.C. (NJ)
Surface Eleva		131.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal Hig Groundwater
Termination I	-	12.6 feet bgs	Date Completed:	10/03/05	Depths/Elevations (feet bgs / feet msl)	Depths/Elevations
Proposed Loc		SE Parcel		P. Howell		(feet bgs / feet msl)
Excavating/Te	est Method:	Test Pit Excavation/ Visual Observation		Carroccia Deere 310G	While Excavating:NE8 Hours:NE	ESHGW: NE
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			ON OF MATERIA assification)	LS	REMARKS
	0.0 - 0.8 (TS)	Dark Grayish-Brown Topse	oil			
S-1 @ 2.0' (Bag)	0.8 - 2.5 (1)	Gray (10 YR 7/1) and Brow	wnish-Yellow (10 YR	6/8) Mottles	cky Structure; Dry; Hard; Few Light	_
S-2 @ 3.3' (Bag) S-3 @ 4.0' (Tube)	2.5 - 7.9 (2)	Dark Red (7.5 YR 3/6) Silt	y Clay Loam, Moder	ate Medium Angul	ar Blocky Structure, Moist, Firm	– 25% Shale
	7.9 - 12.6 (3)	Dark Red (2.5 YR 3/6) Silt				- 25% Shale

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

RECORD OF SUBSURFACE EXPLORATION 8098spplogs.wpd 11/10/05



Soil Profile Pit No.: SPP-4

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Project:	Propose	d Commercial/Residentia	al Development		WAI Project No.:	VJ05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somers	et, NJ	Client:	ohler Engineering, P.C. (NJ)
Surface Eleva	ition:	129.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal High
Termination I	Depth:	13.5 feet bgs	Date Completed:	10/03/05	Depths/Elevations	Groundwater Depths/Elevations
Proposed Loc	ation:	SW Basin	Logged By:	P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: 12.9/116.1	ESHGW: 10.0/119.0
		Visual Observation	Equipment:	Deere 310G	8 Hours: 10.0/119.0	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			ΓΙΟΝ OF MATERIAI Classification)	LS	REMARKS
	0.0 - 0.9 (Ploughed)	Brown (10 YR 4/4) Silt Los Structure, Moist, Friable	am; 10% Angular/S	Subround Gravel, Moo	derate Medium Angular Blocky	
S-1 @ 6.0' (Tube) S-2 @ 6.0' (Bag)		Reddish-Brown (2.5 YR 4/ Structure; Moist; Firm			Gtrong, Medium Angular Blocky	Angular and Subround Gravel/Cobbles
(246)	7.0 - 13.5 -	As Above; Moist; Friable				Rapid Water Infiltration @ 12.9 fbgs



Soil Profile Pit No.: SPP-5

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Project:	Propose	ed Commercial/Residenti	al Developmen	t	WAI Project No.: WJ	05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somer	rset, NJ	Client: Bol	ller Engineering, P.C. (NJ)
Surface Eleva	ation:	126.50 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal High
Termination I	Depth:	13.0 feet bgs	Date Complete	d: 10/03/05	Depths/Elevations	Groundwater Depths/Elevations
Proposed Loc	ation:	SW Basin	Logged By:	P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: 10.0/116.5	ESHGW: 7.0/119.5
	1	Visual Observation	Equipment:	Deere 310G	8 Hours: 9.0/117.5	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)		DESCRI	PTION OF MATERIA (Classification)	ALS	REMARKS
	0.0 - 1.5 (Ploughed)	Brown (10 YR 4/4) Silty L	oam; Few Fine G	ravel; Wet		Surrounding Surface Ponding Water from Rain 2 Day Prior
S-1 @ 3.0' (Bag)	1.5 - 5.9 (1)	Yellowish Brown (10 YR 5 Blocky Structure; Firm; We Yellow (10 YR 6/8) Mottle	5/0) Silty Clay Lo et; Slightly Plastic s	c; Many Coarse Light	Cobbles; Strong, Coarse Angular Gray (10 YR 7/1) and Brownish-	Very Slow Seepage from 2.4 fbgs to 3.0 fbgs
S-2 @ 6.0' (Tube) S-3 @ 6.0' (Bag)	5.9 - 7.0 (2)	Reddish-Brown (2.5 YR 4/ Extremely Firm	6) Silty Clay Loa		obbles; Angular Blocky Structure;	-
S-4 @ 7.5'	7.0 - 8.0 -	Light Gray (5 YR 7/1) Silty				Rounded Gravel
S-5 @ 11.0'	- 8.0 - 13.0 -				rate, Angular Blocky Structure; Moist;	Wet and Sticky @ 11.0 fbgs
		Soil Profile Pit SPP-5 Term	iniated at a Depth			
	1	High Groundwater NE = Not Encount			RECORD OF SUBSURFACE	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

RECORD OF SUBSURFACE EXPLORATION 8098spplogs.wpd 11/10/05



Soil Profile Pit No.: SPP-6

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Project:	Propose	ed Commercial/Residentia	al Development		WAI Project No.: W	/J05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somerset, NJ		Client: B	ohler Engineering, P.C. (NJ)
Surface Eleva	ation:	126.00 feet msl	Date Started: 10	0/03/05	Water	Estimated Seasonal High Groundwater
Termination I Proposed Loc	-	12.3feet bgs SWBasin	Date Completed: 10 Logged By: P. How	0/03/05 vell	Depths/Elevations (feet bgs / feet msl)	Depths/Elevations (feet bgs / feet msl)
Excavating/T		Test Pit Excavation/ Visual Observation	Contractor: Carroc Equipment: Deere 3	ccia W	/hile Excavating: NE Hours: NE	ESHGW: NE
SAMPLE NUMBER	HORIZON/ DEPTH (feet)		DESCRIPTION OF (Classifica			REMARKS
	0.0 - 1.5 (TS)	Dark Grayish-Brown Topsc	9il			
S-1 @ 2.5' (Bag)	1.5 - 4.2 (1)	Yellowish-Brown (5 YR 5/ 6/8) and Light Gray (10 YR	8) Silty Loam; Angular Bloo	cky; Dry; Hard; M 2 fbgs and 4.2 fbgs	1any Brownish-Yellow (10 YR s	
S-2 @ 5.0' (Bag) S-3 @ 5.0' (Tube)	4.2 - 7.3 (2)	Dark Red (2.5 YR 2/6) San		; Subangular Bloo	cky Structure; Moist; Firm	Rounded Gravel
S-4 @ 8.0' (Bag)	7.3 - 12.3 (3)	Dark Red (2.5 YR 3/6) Silt				30% Shale
		Soil Profile Pit SPP-6 Term	inated at a Depth of 12.25 F	Feet Below Groun	d Surface	



Soil Profile Pit No.: SPP-7

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Project:	Propose	ed Commercial/Residenti	al Developmen	ıt	WAI Project No.:	WJ05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somer	rset, NJ	Client:]	Bohler Engineering, P.C. (NJ)
Surface Eleva	ition:	131.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal High
Termination I	Depth:	12.6 feet bgs	Date Complete	ed: 10/03/05	Depths/Elevations	Groundwater Depths/Elevations
Proposed Loc	ation:	SW Basin	Logged By:	P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: NE	ESHGW: NE
		Visual Observation	Equipment:	Deere 310G	8 Hours: NE	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)		DESCRI	PTION OF MATERIA (Classification)	LS	REMARKS
	0.0 - 1.5 (FILL)	Brown (10 YR 4/4) Loam;	Structureless; Mo			
S-1 @ 5.0' (Tube) S-2 @ 5.0'	1.5 - 5.0 (2)	Dark Red (2.5 YR 3/6) Silt				 Bands of Rounded Gravel, Few Fine Roots to 5.0 fbgs
(Bag) S-3 @ 8.0' (Bag)	5.0 - 12.6 (3)	Dark Red (2.5 YR 3/6) Silt				 15% Shale

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

RECORD OF SUBSURFACE EXPLORATION 8098spplogs.wpd 11/10/05



Soil Profile Pit No.: SPP-8

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Project:	Propose	d Commercial/Residenti	al Development	WAI Project No.: WJ	05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somerset, NJ	Client: Bol	ıler Engineering, P.C. (NJ)
Surface Eleva		151.00 feet msl	Date Started: 10/03/05		Estimated Seasonal High
Termination I	Depth:	13.0 feet bgs	Date Completed: 10/03/05		Groundwater
Proposed Loc	ation:	NW Basin	Logged By: P. Howell	(feet bgs / feet msl)	Depths/Elevations (feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor: Carroccia	While Excavating: NE	ESHGW: NE
		Visual Observation	Equipment: Deere 310G	8 Hours: NE	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)		DESCRIPTION OF MATI (Classification)	ERIALS	REMARKS
	0.0 - 2.0 (FILL)	Brown (10 YR 4/4) Loamy	Sand; 10% Gravel; Structureless;	Moist; Friable	
S-1 @ 2.5' (Bag)	2.0 - 3.9 (2)	Light Gray (10 YR 7/1) Mo		Blocky Structure; Moist; Friable; Few Fine	-
S-2 @ 4.2' (Bag) S-3 @ 4.2' (Tube)	3.9 - 7.0 (3)		y Loam; Angular Blocky Structure		
S-4 @ 8.0' (Bag)	7.0 - 13.0 (4)	Dark Red (2.5 YR 3/6) Silt	y Clay Loam; Angular Blocky Stru	ucture; Moist; Friable	30% Shale
		Soil Profile Pit SPP-8 Term	inated at a Depth of 13.0 Feet Belo	ow Ground Surface	



Soil Profile Pit No.: SPP-9

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Project:	Propose	d Commercial/Residenti	al Developmen	t	WAI Project No.: WJ	05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somer	rset, NJ	Client: Bol	ıler Engineering, P.C. (NJ)
Surface Eleva		155.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal High
Termination I	Depth:	14.5 feet bgs	Date Complete	d: 10/03/05	Depths/Elevations	Groundwater
Proposed Loc	ation:	NW Basin	Logged By:	P. Howell	(feet bgs / feet msl)	Depths/Elevations (feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: NE	ESHGW: NE
		Visual Observation	Equipment:	Deere 310G	8 Hours: NE	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			PTION OF MATERIA (Classification)	LS	REMARKS
	0.0 - 1.3 (Ploughed)	Brown (10 YR 4/4) Silt Lo				
S-1 @ 2.0' (Bag)	1.3 - 3.9	Yellowish-Red (5 YR 5/6)	Silt Loam; 20% C	Gravel; Massive Struct		-
	3.9 - 8.0	Strong Brown (7.5 YR 5/6) Structure; Slightly Wet; Sli) Silty Clay Loam ghtly Plastic	; 25% Gravel; Moderat	e, Medium Angular Blocky	-
	8.0 - 12.0	Strong Brown (7.5 YR 5/6)) Sandy Clay Loai	m; 75% Gravel; Suban	gular Blocky Structure; Moist; Friable	-
	12.0 - 14.5			y Loam; 90% Gravel; S	Strong, Coarse Angular Blocky	-
		Soil Profile Pit SPP-9 Term	ninated at a Depth	of 14.5 Feet Below G	round Surface	



Soil Profile Pit No.: SPP-10

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Surface Elevation: 156.00 feet msl Date Started: 10/03/05 Water Depth/Elevations (feet bgs / feet msl) Estimated Season Groundwate Depths/Elevations (feet bgs / feet msl) Proposed Location: SWM Logged By: P. Howell Depths/Elevations (feet bgs / feet msl) ESHGW: 12.5/143.5	Project:	Propose	d Commercial/Residenti	ial Development	WAI Project No.: WJ0	5-8098
Termination Defth 14.0 feet bgs Date Completed: 10/03/05 Water Depths/Elevations (feet bgs / feet msl) Groundwater Depths/Elevations (feet bgs / feet bgs / feet msl) Groundwater Depths/Elevations (feet bgs / feet bgs / fe	Location:	Route 2	06 and Route 518; Mont	gomery, Somerset, NJ	Client: Bohl	er Engineering, P.C. (NJ)
Proposed Location: SWM Logged By: P. Howell (feet bgs / feet msl) Depths/Lieval (feet bgs / feet (feet bgs / feet Excavating/Test Method: Test Pit Excavation/ Visual Observation Contractor: Carroccia While Excavating: 12.5/143.5 ESHGW: 12.5/143.5 SAMPLE NUMBER HORIZON/ (feet) DEPTH (feet) DESCRIPTION OF MATERIALS (Classification) While Excavating: 12.5/143.5 ESHGW: 12.5/143.5 SAMPLE NUMBER Brown (10 YR 4/4) Silty Loam; Moderate Medium Subangular Blocky Structure, Moist, Friable REMARKS S-1 @ 5.0' (Tube) 1.0 - 6.9 Strong Brown (7.5 YR 5/6) Silty Loam; 25% Gravel; Slightly Wet; Plastic Rounded Gravel S-3 @ 7.5' (Bag) 6.9 - 8.0 Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 75% Gravel; Moist; Friable Rounded/Weathered S-3 @ 7.5' (Tube) 8.0 - 9.0 Reddish-Yellow (7.5 YR 6/8) Sandy Loam; 75% Gravel; Moist; Friable Rounded/Weathered 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm Shale						Estimated Seasonal High Groundwater
Excavating/Test Method: Test Pit Excavation/ Visual Observation Contractor: Equipment: Carroccia Deere 310G While Excavating: 12.5/143.5 ESHGW: 12.5/143.5 SAMPLE NUMBER HORIZON/ DEPTH (feet) HORIZON/ DEPTH (feet) DESCRIPTION OF MATERIALS (Classification) I hour: 12.5/143.5 ESHGW: 12.5/143.5 SAMPLE NUMBER HORIZON/ DEPTH (feet) DESCRIPTION OF MATERIALS (Classification) More and the form of the	Proposed Loc	ation:	-			Depths/Elevations (feet bgs / feet msl)
SAMPLE NUMBER DEPTH (feet) DEPTH (feet) DEPTH (feet) DEPTH (feet) REMARKS 0.0 - 1.0 (Ploughed) Brown (10 YR 4/4) Silty Loam; Moderate Medium Subangular Blocky Structure, Moist, Friable RemARKS S-1 @ 5.0' (Tube) S-2 @ 5.0' (Bag) 1.0 - 6.9 Strong Brown (7.5 YR 5/6) Silty Loam; 25% Gravel; Slightly Wet; Plastic Rounded Gravel S-3 @ 7.5' (Bag) 6.9 - 8.0 Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 75% Gravel; Moist; Friable Rounded/Weathered S-3 @ 8.5' 8.0 - 9.0 Reddish-Yellow (7.5 YR 6/8) Sandy Loam; 75% Gravel; Moist; Friable Rounded/Weathered S-3 @ 8.5' 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm Shale	Excavating/T	est Method:	Test Pit Excavation/	Contractor: Carroccia	-	ESHGW: 12.5/143.5
(Ploughed)(Ploughed)Rounded GravelS-1 $(a, 5.0')$ (Tube)1.0 - 6.9Strong Brown (7.5 YR 5/6) Silty Loam; 25% Gravel; Slightly Wet; PlasticRounded GravelS-2 $(a, 5.0')$ (Bag)6.9 - 8.0Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 75% Gravel; Moist; FriableRounded/WeatheredS-3 $(a, 7.5')$ (Tube)8.0 - 9.0Reddish-Yellow (7.5 YR 6/8) Sandy Loam; 75% Gravel; Moist; FriableRounded/WeatheredS-3 $(a, 8.5')$ 9.0 - 14.0Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet $(a, 12.5)$ fbgs; FirmShale		DEPTH			LS	REMARKS
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				-		
S-3 @ 7.5' (Bag) S-4 @ 7.5' (Tube) 6.9 - 8.0 Strong Brown (7.5 YR 5/6) Sandy Clay/Loam; 75% Gravel; Moist; Friable Rounded/Weathered S-3 @ 8.5' 8.0 - 9.0 Reddish-Yellow (7.5 YR 6/8) Sandy Loam; 75% Gravel; Moist; Friable Rounded/Weathered 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm Shale	(Tube) S-2 @ 5.0'	1.0 - 6.9	Strong Brown (7.5 YR 5/6)) Silty Loam; 25% Gravel; Slightly Wet	Plastic	Rounded Gravel
S-3 @ 8.5' 8.0 - 9.0 Reddish-Yellow (7.5 YR 6/8) Sandy Loam; 75% Gravel; Moist; Friable 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm Shale 9.0 - 14.0 Shale 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Shale 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 9.0 - 14.0 Dark Reddish-Brown (2.5	(Bag) S-4 @ 7.5'	6.9 - 8.0	Strong Brown (7.5 YR 5/6)) Sandy Clay/Loam; 75% Gravel; Moist	; Friable	Rounded/Weathered Gravel
9.0 - 14.0 Dark Reddish-Brown (2.5 YR 3/2) Silty Clay; 95% Gravel; Moist Becoming Wet @ 12.5 fbgs; Firm Shale		8.0 - 9.0				Rounded/Weathered Gravel
Soil Profile Pit SPP-10 Terminated at a Depth of 12.0 Feet Below Ground Surface		9.0 - 14.0				- Shale

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

RECORD OF SUBSURFACE EXPLORATION 8098spplogs.wpd 11/10/05



Soil Profile Pit No.: SPP-11

(Page 1 of 1)

Project:	Propose	ed Commercial/Residenti	al Development	t	WAI Project No.: WJ	05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somer	set, NJ	Client: Boh	ler Engineering, P.C. (NJ)
Surface Eleva	tion:	152.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal Hig
Termination I	Depth:	13.5 feet bgs	Date Completee	d: 10/03/05	Depths/Elevations	Groundwater Depths/Elevations
Proposed Loc	ation:	Northern Property	Logged By:	P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/Te	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: NE	ESHGW: NE
	-	Visual Observation	Equipment:	Deere 310G	0.5 Hours: NE	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			PTION OF MATERIAI (Classification)	LS	REMARKS
	0.0 - 1.0 (Ploughed)	Brown (10 YR 4/4) Silty L			cky Structure, Moist, Friable	
	1.0 - 2.5	Brownish Yellow (10 YR 5			e Structure; Firm	_
	2.5 - 6.0				assive Structure; Slightly Wet;	-
	6.0 - 11.0				r Blocky Structure, Moist, Firm	-
	11.0 - 13.5	Reddish-Brown (2.5 YR 4/ Moist; Firm	6) Silty Clay Loan	m; 85% Gravel; Strong	, Coarse Angular Blocky Structure;	_
		Soil Profile Pit SPP-11 Ten	minated at a Dept	h of 1325.0 Feet Below	Ground Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

RECORD OF SUBSURFACE EXPLORATION 8098spplogs.wpd 11/10/05



Soil Profile Pit No.: SPP-12

(Page 1 of 1)

Project:	Propose	d Commercial/Residenti	al Development		WAI Project No.: WJ)5-8098		
Location:	Route 2	06 and Route 518; Mont	gomery, Somers	et, NJ	Client: Boh	hler Engineering, P.C. (NJ)		
Surface Eleva Termination I		150.00 feet msl 13.5 feet bgs	Date Started: Date Completed:	10/03/05 10/03/05	Water Depths/Elevations	Estimated Seasonal High Groundwater		
Proposed Loc	-	NW Basin	Logged By:	P. Howell	(feet bgs / feet msl)	Depths/Elevations (feet bgs / feet msl)		
Excavating/Te		Test Pit Excavation/ Visual Observation	Contractor: Equipment:	Carroccia Deere 310G	While Excavating: 7.0/143.0 (P) Hours:	ESHGW: 7.0/143.00 (P)		
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			TION OF MATERIAL Classification)	S	REMARKS		
	0.0 - 1.0 (Ploughed)			-	ky Structure, Moist, Friable			
	1.0 - 2.8	Yellowish-Red (5 YR 5/6) Friable	Silt Loam; 20% Gr	ravel; Strong, Coarse A	ngular Blocky Structure; Moist;	Rounded Gravel		
	2.8 - 7.0	Strong Brown (7.5 YR 5/6)						
	7.0 - 12.0) Sandy Clay/Loam			Slow Seepage from South Wall @ 7.0 fbgs		
	12.0 - 13.5	Reddish-Brown (2.5 YR 4/ Firm	6) Silty Clay; 90%	Gravel; Moderate, Me	dium Angular Blocky Structure;			
		Soil Profile Pit SPP-12 Ten	minated at a Depth	of 13.5 Feet Below Gr	ound Surface			



Soil Profile Pit No.: SPP-13

(Page 1 of 1)

Project:	Propose	ed Commercial/Residenti	al Developmen	t	WAI Project No.:	VJ05-8098
Location:	Route 2	06 and Route 518; Mont	gomery, Somer	rset, NJ	Client:	Bohler Engineering, P.C. (NJ)
Surface Eleva		144.00 feet msl	Date Started:	10/03/05	Water	Estimated Seasonal High
Termination I	Depth:	14.0 feet bgs	Date Complete	rd: 10/03/05	Depths/Elevations	Groundwater Depths/Elevations
Proposed Loc	ation:	SWM	Logged By:	P. Howell	(feet bgs / feet msl)	(feet bgs / feet msl)
Excavating/T	est Method:	Test Pit Excavation/	Contractor:	Carroccia	While Excavating: NE	ESHGW: NE
		Visual Observation	Equipment:	Deere 310G	8 Hours: NE	
SAMPLE NUMBER	HORIZON/ DEPTH (feet)			PTION OF MATERIAI (Classification)	LS	REMARKS
	0.0 - 1.5 (Ploughed)	Brown (10 YR 4/4) Silt Lo		-		
S-1 @ 2.0' (Bag)	1.5 - 3.9			; 20% Gravel; Angular	Blocky Structure; Massive Structu	 re;
S-2 @ 6.0'	3.9 - 14.0	Reddish-Brown (2.5 YR 4/	6) Silty Clay Loa	m; Angular Blocky Stru	ucture; Massive Structure; Firm	
		Soil Profile Pit SPP-13 Ter	minated at a Dept	th of 14.0 Feet Below G	round Surface	

NOTES: ESHGW = Estimated Seasonal High Groundwater, NE = Not Encountered, NA = Not Applicable

RECORD OF SUBSURFACE EXPLORATION 8098spplogs.wpd 11/10/05



Soil Profile Pit No.: STP-1

Page 1 of 1

		I Mixed-Use							WAI	Project No.:		GP1815322.000		
			Georgeto	own-Frankli			ry Township, Sor			Client:		Madison Marquet	-	
urface Eleva	tion: ±	126.3	feet		Date Started:		2/27/2018	W	ater Depth	Elevation	_	Estimate	d Seasor	nal High
ermination D	Depth:	15.0	feet bg	s	Date Comple	ted:	2/27/2018		(feet bgs)	(feet)		Groundwate	er Depth	Elevation
oposed Loc	ation:	SWM Bas	in South	n	Logged By:		CAW	During:	12.0(P)	114.3	${f \Lambda}$		eet bgs)	
cavating M		Test Pit E			Contractor:		CE	At Completio			¥	At Completion:	NE	
est Method:		Visual Ob:			Rig Type:		JD410	24 Hours:						·
cormettiou.		13001 00			- Kig Type:		00410			I	Ţ			
SAMPLE	INFORM	IATION	D	EPTH	HORIZON			DESCRIPTIO					RE	MARKS
Depth (feet)	Number	Туре		feet				(Clas	sification)				
			0.0											
					TOPSOIL/PLOUGHED HORIZON			4/2) SILT LOAM; 5%			ucture	e; Slightly Moist to		
			0.8	7	RESIDUAL	Moist	; Friable; Common H	ine Roots; No Mottling 4) SILTY CLAY LOAN	g; Clear Boun	idary I: Subangular I	Block	Structure: Moist to	-	
			1.5	7	RESIDOAL			cky; No Roots; No Mo		i, Subangulai L	JIUCK			
			-	1				· , , · · · · · · · ·	5				Indication	s of Impeded
														@ 4.0 fbgs to ~-
			-	1									fbgs	
			5		1									
			4.5	¥		1								
			5.0	4	1	Redd	ish-Brown (2.5YR 3	4) SILTY CLAY; 5% G	ravel: Strong	. Massive Stru	cture:	Moist: Firm: Plastic:	-	
			5.0	-	1		pots; No Mottling	.,		,	5.010,		1	
			-	4		1	-						1	
				4		1								
			-	4		1								
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			10.0	1	1									
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			-	4										
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			-	4										
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			12.0	4										
			13.0	4		Dedd	ich Brown (2 EVB 2	4) SILTY CLAY LOAN	1. 200/ Creve	l. Cubanaular I	كامعاد	Chruchurge Mate	-	
			_	4			No Roots; No Mottli		I; 20% Grave	i; Subangular E	зюску	y Structure; wet;		
						,		19						
			_											
			15.0											
T				1		Soil P	rofile Pit STP-1 Ter	minated at a Depth of	15.0 Feet Bel	low Ground Su	rface			
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			25.0	1		1								
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			1	1		1							1	

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

RECORD OF SUBSURFACE EXPLORATION 15322STPLogs 3/15/2018



Soil Profile Pit No.: STP-2

/ onal High
Elevation
(feet)
_
EMARKS
ns of Impeded e @ 4.5 fbgs to
e @ 4.5 lbgs to



Soil Profile Pit No.: STP-3

roject:	Proposed	I Mixed-Use	e Develo	pment				WAI Project	No.:	GP1815322.000	
ocation:	NJSH Ro	ute 206 & 0	Georgeto	wn-Frankl	in Turnpike; Mont	gomery Township, So	merset Co., NJ	Cli	ent:	Madison Marquette	e Realty
urface Eleva	ation: ±	128.8	feet		Date Started:	2/27/2018	Wate	er Depth Eleva	tion	Estimated	d Seasonal High
ermination I	Depth:	18.0	feet bgs	S	Date Complet	ed: 2/27/2018	(fe	eet bgs) (feet)		Groundwate	r Depth Elevation
oposed Loo	cation:	SWM Bas	in South		Logged By:	CAW	During:	13.5 115.3	$\overline{\Lambda}$	(fe	et bgs) (feet)
cavating M		Test Pit E			Contractor:	CE	At Completion:	13.5 115.3	-	At Completion:	13.5 115.3
st Method:		Visual Ob	servatior	า	Rig Type:	JD410	24 Hours:	i	Ť		·
									- +		
SAMPLE	1	IATION	DI	EPTH	HORIZON		DESCRIPTION		S		REMARKS
Depth (feet)	Number	Туре		feet			(Classif	fication)			
			0.0								
			_	1	PLOUGHED HORIZON	Dark Reddish-Gray (5Y Many Fine Roots; No M	R 4/2) SILT LOAM; 5% Gra	avel; Weak, Granula	r Structure	e; Moist; Friable;	
			0.8	1	RESIDUAL		8) SILTY CLAY LOAM; 5%	Gravel; Moderate,	Subangula	r Blocky Structure;	
			_	1			lo Mottling; Clear Boundar		•		
				1							
			3.0								
				1		Reddish-Brown (2.5YR Firm; No Roots; No Mot	3/4) SILTY CLAY LOAM; 1	0% Gravel; Moderat	e, Angulai	r Blocky Structure;	
			_	4		1 111, NO 10018, NO MOL	ang, onoon boundary				
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			10.0								
				1							
			12.0								
			_	1		Reddish-Brown (2.5YR No Roots; No Mottling; \$	3/4) SILTY CLAY LOAM; 2	0% Gravel; Strong,	Angular Bl	ocky Structure; Firm;	
						No Nools, No Molling, V	Shooth Doundary				
			$\mathbf{\Lambda}_{i}$	¥							
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			18.0	<u> </u>			minated of a Dr. d. A.C.	0 Faat Data: 0	4 0		
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			25.0	4							
			23.0	-	1						
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Soil Profile Pit No.: STP-4

			e Developme	ot			WAI Pro	iect No ·	GP1815322.000	
	-		-	Franklin Turnpike; Mont	gomery Township, So	nerset Co., NJ	WAITIO	Client:	Madison Marquette	e Realty
Surface Eleva				Date Started:			er Depth E			Seasonal High
Fermination I	Depth:		feet bgs	Date Complet	ed: 2/27/2018	(fe	eet bgs) (feet)		Depth Elevation
Proposed Loo		SWM Bas		Logged By:	CAW	During:	13.5 1	191		et bgs) (feet)
xcavating M		Test Pit E		Contractor:	CE	At Completion:		*	At Completion:	13.5 115.5
est Method:		Visual Obs	servation	Rig Type:	JD410	24 Hours:		<u> </u>		
SAMPLE	1	r	DEPT	H HORIZON		DESCRIPTION (Classif	REMARKS			
Depth (feet)	Number	Туре	feet			(Classii	lication)			
			0.0	PLOUGHED	Reddish-Grav (5YR 4/2)	SILT LOAM; 5% Gravel; \	Neak Granula	r Structure: Slig	htly Moist: Friable:	
			0.7	HORIZON	Few Medium Roots; No I	Nottling; Clear Smooth Bo	undary	-	-	
				RESIDUAL		(4) SILTY CLAY LOAM; 1 Firm; No Roots; No Mottlir			n Subangular Blocky	
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			10.0		Soil Profile Pit STP-4 Te	minated at a Depth of 15.	.0 Feet Below (Ground Surface		
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				1						
			20.0							
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Soil Profile Pit No.: STP-5

		d Mixed-Use							WAIF	Project No.:	GP1815322.000		
				wn-Frankli			ry Township, Som			Client:	Madison Marquet	,	
urface Eleva	tion: ±	128.5	feet		Date Started:		2/27/2018	Wate	er Depth	Elevation	Estimate	d Season	al High
ermination D	epth:	15.0	feet bgs	5	Date Complet	ted:	2/27/2018	(fe	eet bgs)	(feet)	Groundwate	r Depth	Elevation
oposed Loc	ation:	SWM Bas	in South		Logged By:		CAW	During:	14.0	<u>114.5</u>	(fe	eet bgs)	(feet)
cavating Mo		Test Pit E			Contractor:		CE	At Completion:	14.0	114.5	At Completion:		114.5
st Method:		Visual Ob			Rig Type:		JD410	24 Hours:		↓ <u></u> ↓ ↓			
ot motilou.		Violati Ob		•	ing iypo.		00110			Ţ		-	
SAMPLE	INFORM	IATION	DE	EPTH	HORIZON			DESCRIPTION				RE	MARKS
Depth (feet)	Number	Туре		feet				(Classi	fication)	1			
			0.0		TOPSOIL	Dark F	Reddish-Brown (5YF	2 4/2) SILT LOAM; 10% (Gravel; We	ak, Granular Struc	ture; Slightly Moist;		
			0.1	1	FILL	Friable	e; Few to Common I	Roots; No Mottling; Clear	r Boundary				
								SILT CLAY LOAM; 10%	Gravel; Sti	ructureless; Slightl	y Moist; No Roots; No		crete Debris (
						Mottlin	ng; Irregular Bounda	ry				inches)	- (h
				1								FIII @ ~4.0) fbgs on ?
			2.5										
				1	RESIDUAL	Reddi	sh-Brown (2.5YR 3/	4) SILTY CLAY LOAM; 1	0% Gravel:	Moderate, Mediu	m Subangular Blocky		
			-					rm; No Roots; No Mottlir					
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			15.0			Soil P	rofile Pit STP-5 Terr	ninated at a Depth of 15.	.0 Feet Belo	ow Ground Surface	e		
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Soil Profile Pit No.: STP-6

Page 1 of 1

roject:	Proposed	Mixed-Use		oment					WAL	Project No.		GP1815322.000	
					Turnpike: Mont	aome	ery Township, Som	erset Co N.I	11411	Client		Madison Marquet	te Realty
urface Eleva					Date Started:		2/27/2018		er Denth	Elevatior			d Seasonal High
ermination E			feet bgs		Date Complet		2/27/2018		eet bgs)		-		er Depth Elevation
oposed Loc	-	SWM Bas			Logged By:		CAW	During:	16.0	115.0	~-		eet bgs) (feet)
cavating M		Test Pit E			Contractor:		CAW	At Completion:		<u>115.0</u> 116.0	Ţ.	At Completion:	15.0 116.0
										·	-	At completion.	15.0 110.0
est Method:		Visual Ob	servation		Rig Type:	-	JD410	24 Hours:		<u></u>	Ŧ		
SAMPLE	INFORM		DE	PTH	HORIZON			DESCRIPTION					REMARKS
Depth (feet)	Number	Туре	-	ieet				•	fication)			<u></u>	
			0.0		TOPSOIL			/2) SILT LOAM; 5% Gr o Mottling; Wavy Boun		, Granular Str	ucture	e; Slightly Moist;	
			0.3	1	RESIDUAL			SILTY CLAY LOAM; 5%		oderate, Med	ium Su	ubangular Blocky	
						Struct	ture; Slightly Moist; F	rm; No Roots; No Mott	ling; Gradua	al Boundary			
			_	4									
				4									
			3.0										-
			_	4			ish-Brown (2.5YR 3/4 s; No Mottling; Gradua) SILTY CLAY; 5% Gra	vel; Modera	ate, Massive S	Structu	ure; Moist; Firm; NO	
				.		1,0018	, to mouning, Gradua						
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						Soil P	Profile Pit STP-6 Term	inated at a Depth of 17	.0 Feet Bel	ow Ground S	urface	1	
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Soil Profile Pit No.: STP-7

), I IN -							~ <u> </u>
Project:	Proposed	Mixed-Use	e Develop	oment				WAI Project No.:	GP1815322.000	
Location:					in Turnpike: Mont	aomery Townshi	p, Somerset Co., NJ	Client:	Madison Marquett	e Realtv
Surface Elev					Date Started:			r Depth Elevation		d Seasonal High
			-							-
Termination	-		feet bgs		Date Complet			eet bgs) (feet)		r Depth Elevation
Proposed Lo	cation:	SWM Bas	in North		Logged By:	CAW	During:	NE	T (fe	eet bgs) (feet)
Excavating M	lethod:	Test Pit Ex	xcavation	۱	Contractor:	CE	At Completion:			NE
Test Method		Visual Obs			Rig Type:	JD410	24 Hours:		-	
i oot motiou	•	vioual obt	Solvation		-	00110		'	¥	
SAMPLE			DE	PTH			DESCRIPTION			
0/ 411 22					HORIZON			OF MATERIALS		REMARKS
Depth (feet)	Number	Туре	f	eet			(Classif	fication)		
			0.0	1		Dark Reddish-Grav	/ (5YR 4/2) SILT LOAM; 10% Gr	ravel; Weak, Subangular	Blocky to Granular	
					TOPSOIL		riable; Few Medium Roots; No M			
			0.2	Į			YR 5/8) SANDY CLAY LOAM; 15			
						Structure; Slightly	Moist; Firm; Slightly Cemented; S	Sticky; No Roots; No Mot	ling; Gradual Boundary	
				1						
	1		-	ł						
	1		I. —	ł						
1	1		4.5	1						
	1		5.0				5YR 3/4) SILTY CLAY LOAM; 10		locky Structure; Moist;	
	1			1		Firm; Sticky; No Ro	oots; No Mottling; Clear Boundar	ry		
	1		-	1						
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	1			l						
	1		16.5	1						
	1		_		RESIDUAL/WR	Reddish-Brown (2.	5YR 3/4) SILTY CLAY LOAM; 60	0% Gravel		
	1		17.5	1						
	1					Soil Profile Pit STF	P-7 Terminated at a Depth of 17.	5 Feet Below Ground Su	face	
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			25.0	l						



Soil Profile Pit No.: STP-8

Page 1 of 1

Project:	Proposed	Mixed-Use	e Development			w	Al Project No .:	GP1815322.000	
-				nklin Turnpike; Monto	omery Township, So		Client:	Madison Marquett	e Realty
Surface Eleva			feet	Date Started:	2/28/2018		th Elevation		d Seasonal High
ermination [feet bgs	Date Complete		(feet bg	-		Depth Elevation
roposed Loo	cation:	SWM Bas	in North	Logged By:	CAW		1 <u>E </u> J	(fe	et bgs) (feet)
xcavating M		Test Pit E		Contractor:	CE		🗸		NE
est Method:		Visual Obs	servation	Rig Type:	JD410	24 Hours:	🍸		
			DEDTU						
SAMPLE		1	DEPTH	HORIZON		DESCRIPTION OF N (Classification)			REMARKS
Depth (feet)	Number	Туре	feet 0.0		very Dark Brown (7.5YR	2.5/3) SILT LOAM; 5% Gravel; \	•	ture: Slightly Moist:	
			0.2	TOPSOIL	Friable; Few Fine Roots;	No Mottling; Gradual Boundary			
) SANDY CLAY LOAM; 10% Gra tling; Gradual Boundary	avel; Moderate, Granu	Ilar Structure; Firm;	
						unig, Graddar Doundary			
			1						
			5.0						
			9.5						
			10.0			/4) SILTY CLAY LOAM; 10% Gra Mottling; Gradual Boundary	avel; Subangular Bloo	ky Structure; Moist;	
						Motting, Gradual Doundary			
			12.5	WEATHERED	Vary Dark Dad (10)/D 2		avel. Madarata, Chron		
						5/2) SILTY CLAY LOAM; 80% Gr irm; Hard; No Roots; No Mottling		ig Platy to Massive	
			15.0						
			13.0						
			16.0						
			10.0		Soil Profile Pit STP-8 Te	minated at a Depth of 16.0 Feet	Below Ground Surfac	ce	
			-			, .			
			-						
			-						
			1						
			20.0						
			_]						
			1						
			-						
			25.0						
			25.0						
			• •						

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



Soil Profile Pit No.: STP-9

-		Mixed-Use		-					WAL	Project No.:		GP1815322.000		
			-	own-Frankl	in Turnpike; Mont			-		Client:		Madison Marquet		
rface Eleva		-	feet		Date Started:		/2018		-	Elevation		Estimate		
rmination D	-		feet bgs	S	Date Complet		/2018	-	feet bgs)	(feet)		Groundwate	-	
posed Loc		SWM Bas			Logged By:	CAV	V	During:	NE		Y		et bgs)	(feet)
cavating Me	ethod:	Test Pit E	xcavatio	n	Contractor:	CE		At Completion			∇	At Completion:	NE	
st Method:		Visual Obs	servatior	ו	Rig Type:	JD4	10	24 Hours:			Ŧ			
SAMPLE I	NFORM		DE	EPTH				DESCRIPTION						
1		1			HORIZON				ification)				RE	EMARKS
epth (feet)	Number	Туре	0.0	feet				(0.000						
			0.0		FILL	Multicolored	Yellowish-Brov	vn (10YR 5/6) SANDY	CLAY LOA	M: 15% Gravel:	: Stru	ctureless: Moist:	Asphalt, E	Brick, Concrete
			-	4				; Irregular Boundary		,			Debris	
				-										
			-	4										
				-										
			-	4										
				-										
			-	1										
			-	1										
			5.0	4										
				1	ALLUVIAL	Strong Brow	n (7.5YR 5/8) s	SANDY CLAY LOAM;	10% Gravel:	Moderate. Sub	banai	lar Blocky to Single	1	
			-	4				a; Sticky; No Roots; No				, 12 enigio		
				4										
				┥										
			-	-										
			-	4										
				-										
			-	4										
				-										
			10.0	4										
			10.0	-										
			-	4										
				-										
			12.0	4										
			12.0	-	RESIDUAL	Roddich Pro	0 EVP 2/4	SILTY CLAY LOAM;	1E9/ Crovel	Madarata Sul	hong	Jor Pleaky		
			-	4				y; No Roots; No Mottl		, would ale, Sui	bangi	ulai biocky		
				-					0					
				4										
			-	4										
			45.0	4										
			15.0	4										
			40.0	4										
			16.0			Soil Profile	Pit STP-9 Torm	nated at a Depth of 1		ow Ground Sur	face			
				┥							ace			
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			-	4										
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			-	1										
			25.0	4										
			20.0	4										
			1											



Soil Profile Pit No.: STP-10

		Mixed-Use						WAI Project No		GP1815322.000		
Location: NJSH Route 206 & Georgetown-Franklin				own-Frankli			-	Clier		Madison Marquet		
			Date Started:			on	Estimate		-			
Termination Depth: 16.0 feet bgs		Date Complete	ed: 2/28/2018	(fee	t bgs) (feet)		Groundwate	er Depth	Elevation			
posed Loc	cation:	SWM Bas	in East		Logged By:	CAW	During:	NE	${ar \Lambda}$	(f	eet bgs)	(feet)
Excavating Method: Test Pit Excavation			Contractor:	CE	At Completion:		$\overline{\nabla}$	At Completion:				
st Method:		Visual Obs	servatior	า	Rig Type:	JD410	24 Hours:		Ŧ	-		·
									- *			
SAMPLE	INFORM	IATION	D	EPTH	HORIZON		DESCRIPTION O				R	EMARKS
epth (feet)	Number	Туре		feet			(Classific	ation)				
			0.0		50.1	Multine Level Melleviele F		AX 1 O A M 000/ 0				
			_		FILL	wuiticolored Yellowish-E	rown (10YR 5/6) SANDY CL	AY LOAM; 20% Gra	vei; Stri	ictureless; Friable	Concrete	and Brick Deb
			_									
			-									
			5.0	1	1							
			5.0	-	1							
				4								
			6.0	-	A11118/141	Otrana Drawn /2 D/D -/		Crevel: Oct	- DI - 1	Charles and the state of the st	-	
			_	4			B) SANDY CLAY LOAM; 10% No Mottling; Gradual Bounda		BIOCKY	Structure; Moist;		
				_		1 mm, Ouery, NO 10015, 1	to motting, Graduar Doullua					
			_									
				1								
			10.0	-	1							
			10.0	_								
			14.0									
					RESIDUAL	Reddish-Brown (2.5YR 3	3/4) SILTY CLAY LOAM; 15%	6 Gravel; Subangula	r Blocky	Structure; Moist;		
			15.0	-		Firm; No Roots; No Mott						
			16.0	4								
				1		Soil Profile Pit STP-10 T	erminated at a Depth of 1.0 I	Feet Below Ground	Surface			
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APPENDIX B Infiltration Test Results



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-1 @ STP-1

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±126.3 feet</u>

Test Depth/Elev.: ±1.0 fbgs/±125.3 feet

Field Engineer: C. Weinhold

	Time		Water Level Reading				
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	12:25 PM	1:25 PM	12.0	12.0	0.0	60	> 60
1	1:25 PM	3:25 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

M:\Job Folders\2018\1815322GP\Field Documents and Logs\15322 Infiltartion Tests.docx



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-2 @ STP-2

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±125.8 feet</u>

Test Depth/Elev.: ±1.0 fbgs/±124.8 feet

Field Engineer: C. Weinhold

	Time		Water Level Reading				
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	12:02 PM	1:02 PM	12.0	12.0	0.0	60	> 60
1	1:02 PM	3:02 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph

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Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-3 @ STP-3

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±128.8 feet</u>

Test Depth/Elev.: <u>±3.8 fbgs/±125.0 feet</u>

Field Engineer: C. Weinhold

	Time		Water Level Reading		· · · · ·		
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	11:25 PM	12:25 PM	12.0	11.5	0.5	60	120
1	12:25 PM	2:25 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-4 @ STP-4

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±129.0 feet</u>

Test Depth/Elev.: <u>±4.0 fbgs/±124.0 feet</u>

Field Engineer: C. Weinhold

	Time		Water Level Reading		· · · ·		
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	10:12 AM	11:12 AM	12.0	12.0	0.0	60	> 60
1	11:12 AM	1:12 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-5 @ STP-5

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±128.5 feet</u>

Test Depth/Elev.: ±5.5 fbgs/±123.0 feet

Field Engineer: C. Weinhold

	Time		Water Level Reading				
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	9:07 AM	10:07 AM	12.0	12.0	0.0	60	> 60
1	10:07 AM	12:07 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-6 @ STP-6

Date: February 27, 2018

Weather: Clear – 45 to 56 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±131.0 feet</u>

Test Depth/Elev.: <u>+8.0 fbgs/±123.0 feet</u>

Field Engineer: C. Weinhold

	Ti	Time		Water Level Reading			
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	8:15 AM	9:15 AM	12.0	11.0	1.0	60	60
1	9:15 AM	11:15 AM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-7 @ STP-7

Date: February 28, 2018

Weather: Clear - 37 to 61 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±146.0 feet</u>

Test Depth/Elev.: ±6.0 fbgs/±140.0 feet

Field Engineer: C. Weinhold

	Time		Water Level Reading			T ime later i	
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	10:45 AM	11:45 AM	12.0	12.0	0.0	60	> 60
1	11:45 AM	1:25 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph
			<u></u>				



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
	Rte 206 & Georgetown-Franklin Hwy
Location:	Montgomery Twp, New Jersey

Test Hole No.: P-8 @ STP-8

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: ±148.0 feet

Test Depth/Elev.: <u>±8.0 fbgs/±140.0 feet</u>

Field Engineer: C. Weinhold

	Ti	me	Water Level Reading				
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	11:26 AM	12:26 PM	12.0	12.0	0.0	60	> 60
1	12:26 PM	2:26 PM	7.0	7.0	0.0	120	> 120
							K = 0.0 iph
			<u> </u>				



Client:	Madison Marquette Realty Services
Project:	Proposed Mixed Use Development
Location:	Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey

Test Hole No.: P-9 @ STP-9

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: ±152.0 feet

Test Depth/Elev.: ±7.0 fbgs/±145.0 feet

Field Engineer: C. Weinhold

Time Wat				al Roading			
Reading No.	Start	Finish	Start	el Reading Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	8:35 AM	9:35 AM	12.0	10.0	2.0	60	30
1	9:35 AM	10:35 AM	7.0	6.5	0.5	60	120
2	10:35 AM	11:35	7.0	6.75	0.25	60	240
3	11:35 AM	11:35 PM	7.0	7.0	0.0	60	> 120
							K = 0.0 iph



Client:	Madison Marquette Realty Services				
Project:	Proposed Mixed Use Development				
Location:	Rte 206 & Georgetown-Franklin Hwy Montgomery Twp, New Jersey				

Test Hole No.: P-10 @ STP-10

Date: February 28, 2018

Weather: Clear – 37 to 61 (°F)

 File No.:
 GP1815322.000

Surf. Elev.: <u>±152.0 feet</u>

Test Depth/Elev.: ±7.0 fbgs/±145.0 feet

Field Engineer: C. Weinhold

	Time		Water Lev	el Reading			
Reading No.	Start	Finish	Start	Finish	Water Level Fall (Inches)	Time Interval (Minutes)	Rate of Flow (Minutes/Inch)
PS	8:50 AM	9:50 AM	12.0	12.0	0.0	60	> 60.0
1	9:50 AM	11:50 AM	7.0	7.0	0.0	120	> 120.0
							K = 0.0 iph



APPENDIX C Supplemental Information (USCS, Terms and Symbols)



UNIFIED SOIL CLASSIFICATION SYSTEM

	MAJOR DIVISIONS		LETTER SYMBOL	TYPICAL DESCRIPTIONS
	GRAVEL AND	CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	GRAVELLY SOILS	(LITTLE OR NO FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL- SAND MIXTURES, LITTLE OR NO FINES
COARSE GRAINED SOILS	MORE THAN 50% OF COARSE FRACTION	GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
00120	RETAINED ON NO. 4 SIEVE	(APPRECIABLE AMOUNT OF FINES)	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY	CLEAN SAND (LITTLE OR NO	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	SOILS	FINES)	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN	MORE THAN 50% OF	SANDS WITH	SM	SILTY SANDS, SAND-SILT MIXTURES
50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	COARSE FRACTION <u>PASSING</u> NO. 4 SIEVE	FINES (APPRECIABLE AMOUNT OF FINES)	SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE	SILTS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
GRAINED SOILS	AND CLAYS	<u>LESS</u> THAN 50	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			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
MATERIAL IS <u>SMALLER</u> THAN NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMITS <u>GREATER</u> THAN 50	СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
SIZE			ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
F	IIGHLY ORGANIC SOILS		PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

SOIL CLASSIFICATION CHART

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

GRADATION*

COMPACTNESS* Sand and/or Gravel

% FINER BY WEIGHT

 RELATIVE DENSITY

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

CONSISTENCY* Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

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

 $L: \label{eq:linear} L: \label{eq:linear} Control Co$

Other Office Locations:								
Warren, NJ	Southborough, MA	ROCKY HILL, CT	WALL, NJ	Sterling, VA	Evergreen, CO			
908.668.7777	508.485.0755	860.726.7889	732.592.2101	703.464.5858	303.670.6905			



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 ³/₈" 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

<u>Term (Non-</u>	<u>Cohesive Soils)</u>		Standard Pe	Standard Penetration Resistance			
Very Loose Loose			0-4 4-10				
Medium Dense			10-30				
Dense			30-50				
Very Dense			Over 50				
<u>Term (Cohe</u>	sive Soils)	<u>Qu (TSF)</u>					
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 in3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm		
Gravel	3 in5mm	Fine Sand	0.2mm-0.074mm	-			
L :\Cootoobnical I	Forms and Pafaranaas/Pan	orte USCSTDMSSVM DA door	<i>v</i>				

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

Other Office Locations:									
WARREN, NJ	Southborough, MA	ROCKY HILL, CT	WALL, NJ	STERLING, VA	Evergreen, CO				
908.668.7777	508.485.0755	860.726.7889	732.592.2101	703.464.5858	303.670.6905				