AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
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- MATERIALS
- FORENSICS

FACTUAL REPORT OF SUBSURFACE EXPLORATION

Stormwater Management Plan
River Valley School District
660 Varsity Boulevard
Spring Green, Wisconsin

AET Project No. 12-21119

Date:

June 11, 2020

Prepared for:

Jewell Associates Engineers, Inc.
560 Sunrise Drive
Spring Green, Wisconsin 53588

www.amengtest.com

AMERICAN
ENGINEERING
TESTING, INC.

June 11, 2020

Mr. Todd Deibert, P.E.
Jewell Associates Engineers, Inc.
560 Sunrise Drive
Spring Green, Wisconsin 53588

RE: Factual Report of Subsurface Exploration
Stormwater Management Plan
River Valley School District
660 Varsity Boulevard
Spring Green, Wisconsin
AET Project No. 12-21119

Dear Mr. Deibert:

We are pleased to present the results of our subsurface exploration program we performed for your project in Spring Green, Wisconsin. These services were performed according to our proposal to you dated April 30, 2020.

We are submitting an electronic (PDF) version of this report to you. Unless you request otherwise, we will not submit any printed copies of this report to you.

We have enjoyed working with you on this phase of the project. Please contact us if you have questions about this report or require further assistance.

Sincerely,

American Engineering Testing, Inc.

Benjamin B. Mattson, P.E.
Senior Geotechnical Engineer

4203 Schofield Avenue, Suite 1 ▪ Schofield, Wisconsin 54476 ▪ 715-359-3534 ▪ www.amengtest.com

Signature Page

Prepared for:

Mr. Todd Deibert, P.E.
Jewell Associates Engineers, Inc.
560 Sunrise Drive
Spring Green, Wisconsin 53588

Prepared by:

American Engineering Testing, Inc.
4203 Schofield Avenue, Suite 1
Schofield, Wisconsin 54476
(715) 359-3534/www.amengtest.com

Report Authored By:

Benjamin Mattson, P.E.
Senior Geotechnical Engineer

Review Conducted By:

Blake Snyder, P.E.
Geotechnical Engineer

TABLE OF CONTENTS

1.0 INTRODUCTION

Jewell Associates Engineers, Inc. (Jewell) is preparing a stormwater management plan for the River Valley School District in Spring Green, Wisconsin. To assist planning and design, Jewell authorized American Engineering Testing, Inc. (AET) to conduct a subsurface exploration program at the site. This factual report presents the results of the above services.

2.0 SCOPE OF SERVICE

AET's services were performed according to our proposal to Jewell dated April 30, 2020. The authorized scope consists of the following:

- Five standard penetration test borings drilled to depths of 15 feet each.
- Three monitoring well installations.
- Visual/manual classification and limited laboratory testing of the recovered soil samples.
- Preparation of this factual report.

These services are intended for geotechnical purposes. The scope is not intended to explore for the presence or extent of environmental contamination.

3.0 SUBSURFACE EXPLORATION AND LABORATORY TESTING

3.1 Subsurface Exploration

Our subsurface exploration program for this project consisted of drilling five borings on May 19, 2020. Mr. Todd Deibert, P.E., of Jewell specified the number (five), planned depths (15 feet), and locations of the borings, which are shown on Figure 1 in Appendix A. Jewell staked the boring locations at the site and provided us with the surface elevations. Boring B-5 was reduced to 12 feet because of caving soil conditions; continual caving would have prevented proper monitoring well installation.

Prior to drilling, we contacted Wisconsin Diggers Hotline to locate public underground utilities at the site. We drilled the borings using hollow-stem augers. Refer to Appendix A for details on the drilling and sampling methods, the classification methods, and the water level measurement details.

The boring logs are found in Appendix A and contain information concerning soil layering, geologic description, moisture condition, and USCS classifications. Relative density or

consistency is also noted for the natural soils, which are based on the standard penetration resistance (N-value).

We installed monitoring wells at the locations of borings B-1, B-4, and B-5. The monitoring well construction forms are included in Appendix A.

3.2 Laboratory Testing

We performed five sieve analysis tests on the recovered soil samples. The test results are included in Appendix A.

Wisconsin Department of Safety and Professional Services (DSPS) form SBD-10793 "Soil Evaluation – Storm" is included in Appendix A. This form includes USDA soil classifications, infiltration rates established by State of Wisconsin code (based on soil texture), and other characteristics of the soils we encountered in the borings.

4.0 SUBURFACE CONDITIONS

4.1 Subsurface Soils

Below the surficial topsoil, we encountered fine and coarse alluvium in each boring. The fine alluvium was lean clay, silt, and silty clay. The coarse alluvium was sand with varying silt content.

4.2 Groundwater

We measured groundwater at depths of 9.0, 8.5, 12.0, 8.4, and 4.4 feet in borings B-1 through B-5, respectively, at the time of drilling. Groundwater levels will fluctuate due to varying seasonal and annual rainfall and snow melt amounts and other factors.

5.0 ASTM STANDARDS

When we refer to an ASTM Standard in this report, we mean that our services were performed in general accordance with that standard. Compliance with any other standards referenced within the specified standard is neither inferred nor implied.

6.0 LIMITATIONS

Within the limitations of scope, budget, and schedule, we have endeavored to perform our services according to generally accepted geotechnical engineering practices at this time and location. Other than this, no warranty, either express or implied, is intended. Important information regarding risk management and proper use of this report is given in Appendix B entitled "Geotechnical Report Limitations and Guidelines for Use."

Appendix A

AET Project No. 12-21119

Geotechnical Field Exploration and Testing
Boring Log Notes
Unified Soil Classification System
Figure 1 – Boring Locations
Subsurface Boring Logs
Monitoring Well Construction Forms
Gradation Curves
SBD-10793 – Soil Evaluation-Storm

Appendix A
Geotechnical Field Exploration and Testing
AET Project No. 12-21119

A.1 FIELD EXPLORATION

The subsurface conditions at the site were explored by drilling and sampling five geotechnical borings. The boring locations are shown on Figure 1.

A.2 SAMPLING METHODS

A.2.1 Split-Spoon Samples (SS)

Standard penetration (split-spoon) samples were collected in general accordance with ASTM: D1586. The ASTM test method consists of driving a 2-inch O.D. split-barrel sampler into the in-situ soil with a 140-pound hammer dropped from a height of 30 inches. After an initial set of 6 inches, the number of hammer blows to drive the sampler the next 12 inches is known as the standard penetration resistance or N-value.

In the past, standard penetration N-value tests were performed using a rope and cathead for the lift and drop system. The energy transferred to the split-spoon sampler was typically limited to about 60% of its potential energy due to the friction inherent in that system. That converted energy provided what is known as an N_{60} blow count.

Most drill rigs today incorporate an automatic hammer lift and drop system, which has higher energy efficiency and subsequently results in lower N-values than the traditional N_{60} values. We use a Pile Driving Analyzer (PDA) and an instrumented rod to measure the actual energy generated by the automatic hammer system. The drill rig we used for this project (AET drill rig number 67) has a measured energy transfer ratio of 90%. The N-values reported on the boring logs and the corresponding relative densities and consistencies are from the field blow counts and have not been adjusted to N_{60} values.

A.2.2 Disturbed Samples (DS)/Spin-up Samples (SU)

Sample types described as “DS” or “SU” on the boring logs are disturbed samples, which are taken from the flights of the auger. Because the auger disturbs the samples, possible soil layering and contact depths should be considered approximate.

A.2.3 Sampling Limitations

Unless actually observed in a sample, contacts between soil layers are estimated based on the spacing of samples and the action of drilling tools. Cobbles, boulders, and other large objects generally cannot be recovered from test borings, and they may be present in the ground even if they are not noted on the boring logs.

Determining the thickness of “topsoil” layers is usually limited, due to variations in topsoil definition, sample recovery, and other factors. Visual-manual description often relies on color for determination, and transitioning changes can account for significant variation in thickness judgment. Accordingly, the topsoil thickness presented on the logs should not be the sole basis for calculating topsoil stripping depths and volumes. If more accurate information is needed relating to thickness and topsoil quality definition, alternate methods of sample retrieval and testing should be employed.

A.3 CLASSIFICATION METHODS

Soil descriptions shown on the boring logs are based on the Unified Soil Classification System (USCS). The USCS is described in ASTM: D2487 and D2488. Where laboratory classification tests (sieve analysis or Atterberg Limits) have been performed, accurate classifications per ASTM: D2487 are possible. Otherwise, soil descriptions shown on the boring logs are visual-manual judgments. Charts are attached which provide information on the USCS, the descriptive terminology, and the symbols used on the boring logs.

The boring logs include descriptions of apparent geology. The geologic depositional origin of each soil layer is interpreted primarily by observation of the soil samples, which can be limited. Observations of the surrounding topography, vegetation, and development can sometimes aid this judgment.

A.4 WATER LEVEL MEASUREMENTS

The ground water level measurements are shown at the bottom of the boring logs. The following information appears under "Water Level Measurements" on the logs:

- Date and Time of measurement
- Sampled Depth: lowest depth of soil sampling at the time of measurement
- Casing Depth: depth to bottom of casing or hollow-stem auger at time of measurement
- Cave-in Depth: depth at which measuring tape stops in the borehole
- Water Level: depth in the borehole where free water is encountered
- Drilling Fluid Level: same as Water Level, except that the liquid in the borehole is drilling fluid

The true location of the water table at the boring locations may be different than the water levels measured in the boreholes. This is possible because there are several factors that can affect the water level measurements in the borehole. Some of these factors include: permeability of each soil layer in profile, presence of perched water, amount of time between water level readings, presence of drilling fluid, weather conditions, and use of borehole casing.

A.5 TEST STANDARD LIMITATIONS

Field and laboratory testing is done in general conformance with the described procedures. Compliance with any other standards referenced within the specified standard is neither inferred nor implied.

A.6 SAMPLE STORAGE

Unless notified to do otherwise, we routinely retain representative samples of the soils recovered from the borings for a period of 30 days.

BORING LOG NOTES

DRILLING AND SAMPLING SYMBOLS

Symbol	Definition
B, H, N:	Size of flush-joint casing
CA:	Crew Assistant (initials)
CAS:	Pipe casing, number indicates nominal diameter in inches
CC:	Crew Chief (initials)
COT:	Clean-out tube
DC:	Drive casing; number indicates diameter in inches
DM:	Drilling mud or bentonite slurry
DR:	Driller (initials)
DS:	Disturbed sample from auger flights
FA:	Flight auger; number indicates outside diameter in inches
HA:	Hand auger; number indicates outside diameter
HSA:	Hollow stem auger; number indicates inside diameter in inches
LG:	Field logger (initials)
MC:	Column used to describe moisture condition of samples and for the ground water level symbols
N (BPF):	Standard penetration resistance (N-value) in blows per foot (see notes)
NQ:	NQ wireline core barrel
PQ:	PQ wireline core barrel
RD:	Rotary drilling with fluid and roller or drag bit
REC:	In split-spoon (see notes) and thin-walled tube sampling, the recovered length (in inches) of sample. In rock coring, the length of core recovered (expressed as percent of the total core run). Zero indicates no sample recovered.
REV:	Revert drilling fluid
SS:	Standard split-spoon sampler (steel; 1d" is inside diameter; 2" outside diameter); unless indicated otherwise
SU	Spin-up sample from hollow stem auger
TW:	Thin-walled tube; number indicates inside diameter in inches
WASH:	Sample of material obtained by screening returning rotary drilling fluid or by which has collected inside the borehole after "falling" through drilling fluid
WH:	Sampler advanced by static weight of drill rod and 140-pound hammer
WR:	Sampler advanced by static weight of drill rod
94mm:	94 millimeter wireline core barrel
▼:	Water level directly measured in boring
▽:	Estimated water level based solely on sample appearance

TEST SYMBOLS

Symbol	Definition
CONS:	One-dimensional consolidation test
DEN:	Dry density, pcf
DST:	Direct shear test
E:	Pressuremeter Modulus, tsf
HYD:	Hydrometer analysis
LL:	Liquid Limit, %
LP:	Pressuremeter Limit Pressure, tsf
OC:	Organic Content, %
PERM:	Coefficient of permeability (K) test; F - Field; L - Laboratory
PL:	Plastic Limit, %
q_p:	Pocket Penetrometer strength, tsf (approximate)
q_c:	Static cone bearing pressure, tsf
q_u:	Unconfined compressive strength, psf
R:	Electrical Resistivity, ohm-cms
RQD:	Rock Quality Designation of Rock Core, in percent (aggregate length of core pieces 4" or more in length as a percent of total core run)
SA:	Sieve analysis
TRX:	Triaxial compression test
VSR:	Vane shear strength, remolded (field), psf
VSU:	Vane shear strength, undisturbed (field), psf
WC:	Water content, as percent of dry weight
%-200:	Percent of material finer than #200 sieve

STANDARD PENETRATION TEST NOTES

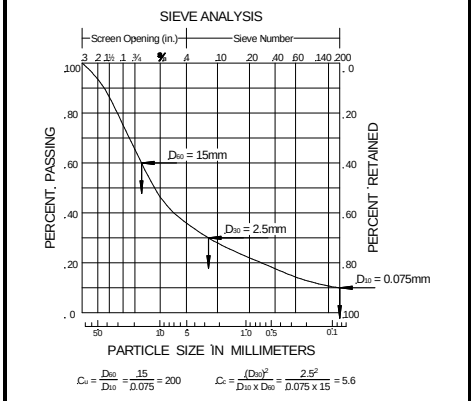
The standard penetration test consists of driving the sampler with a 140 pound hammer and counting the number of blows applied in each of three 6" increments of penetration. If the sampler is driven less than 18" (usually in highly resistant material), permitted in ASTM: D1586, the blows for each complete 6" increment and for each partial increment is on the boring log. For partial increments, the number of blows is shown to the nearest 0.1' below the slash.

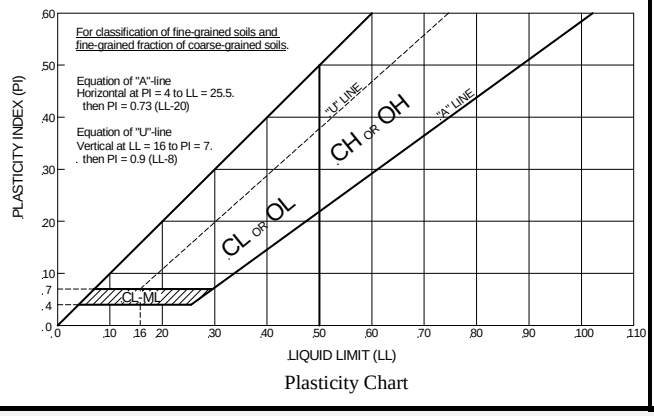
The length of sample recovered, as shown on the "REC" column, may be greater than the distance indicated in the N column. The disparity is because the N-value is recorded below the initial 6" set (unless partial penetration defined in ASTM: D1586 is encountered) whereas the length of sample recovered is for the entire sampler drive (which may even extend more than 18").

UNIFIED SOIL CLASSIFICATION SYSTEM
ASTM Designations: D 2487, D2488

AMERICAN ENGINEERING TESTING, INC.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name[B]
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	Cu≥4 and 1≤Cc≤3[E]	GW	Well graded gravel[F]
			Cu<4 and/or 1>Cc>3[E]	GP	Poorly graded gravel[F]
		Gravels with Fines more than 12% fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	Cu≥6 and 1≤Cc≤3[E]	SW	Well-graded sand[I]
			Cu<6 and 1>Cc>3[E]	SP	Poorly-graded sand[I]
		Sands with Fines more than 12% fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines classify as CL or CH	SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve (see Plasticity Chart below)	Silts and Clays Liquid limit less than 50	inorganic	PI>7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI<4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	Liquid limit–oven dried / Liquid limit – not dried <0.75	OL	Organic clay[K,L,M,N] Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	Elastic silt[K,L,M]
		organic	Liquid limit–oven dried / Liquid limit – not dried <0.75	OH	Organic clay[K,L,M,P] Organic silt[K,L,M,Q]
Highly organic soil			Primarily organic matter, dark in color, and organic in odor	PT	Peat[R]





Plasticity Chart

Notes

[A]Based on the material passing the 3-in (75-mm) sieve.

[B]If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C]Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D]Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E]$Cu = D_{60} / D_{10}$, $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F]If soil contains ≥15% sand, add "with sand" to group name.

[G]If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H]If fines are organic, add "with organic fines" to group name.

[I]If soil contains ≥15% gravel, add "with gravel" to group name.

[J]If Atterberg limits plot is hatched area, soils is a CL-ML silty clay.

[K]If soil contains 15 to 29% plus No. 200 add "with sand" or "with gravel", whichever is predominant.

[L]If soil contains ≥30% plus No. 200, predominantly sand, add "sandy" to group name.

[M]If soil contains ≥30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N]PI≥4 and plots on or above "A" line.

[O]PI<4 or plots below "A" line.

[P]PI plots on or above "A" line.

[Q]PI plots below "A" line.

[R]Fiber Content description shown below.

ADDITIONAL TERMINOLOGY NOTES USED BY AET FOR SOIL IDENTIFICATION AND DESCRIPTION

Grain Size

Term	Particle Size
Boulders	Over 12"
Cobbles	3" to 12"
Gravel	#4 sieve to 3"
Sand	#200 to #4 sieve
Fines (silt & clay)	Pass #200 sieve

Gravel Percentages

Term	Percent
A Little Gravel	3% - 14%
With Gravel	15% - 29%
Gravelly	30% - 50%

Consistency of Plastic Soils

Term	N-Value, BPF
Very Soft	less than 2
Soft	2 - 4
Firm	5 - 8
Stiff	9 - 15
Very Stiff	16 - 30
Hard	Greater than 30

Relative Density of Non-Plastic Soils

Term	N-Value, BPF
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	Greater than 50

Moisture/Frost Condition
(MC Column)

D (Dry): Absense of moisture, dusty, dry to touch.

M (Moist): Damp, although free water not visible. Soil may still have a high water content (over "optimum").

W (Wet/ Waterbearing): Free water visible intended to describe non-plastic soils. Waterbearing usually relates to sands and sand with silt.

F (Frozen): Soil frozen

Layering Notes

Laminations: Layers less than ½" thick of differing material or color.

Lenses: Pockets or layers greater than ½" thick of differing material or color.

Peat Description

Term	Fiber Content (Visual Estimate)
Fibric Peat:	Greater than 67%
Hemic Peat:	33 – 67%
Sapric Peat:	Less than 33%

Organic Description (if no lab tests)

Soils are described as *organic*, if soil is not peat and is judged to have sufficient organic fines content to influence the Liquid Limit properties. *Slightly organic* used for borderline cases.

Root Inclusions

With roots: Judged to have sufficient quantity of roots to influence the soil properties.

Trace roots: Small roots present, but not judged to be in sufficient quantity to significantly affect soil properties.

Figure 1 - Boring Locations
AET Project No. 12-21119
June 11, 2020

JEWELL associates engineers, inc.
Engineers - Architects - Surveyors

560 Sunrise Drive
Spring Green, WI 53588
phone: 608-588-7484

RVSD Stormwater Management Plan
Village of Spring Green
Sauk County, Wisconsin

Date
5-13-20

Date	Revision

Drawing Name
Proposed Boring Locations

Sheet No.
C1.0

Project Number
R61030

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **12-21119** Log of Boring No. **B-1 (p. 1 of 1)**

Project: **Stormwater Management Plan; River Valley School District; Spring Green, Wisconsin**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **720.1** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
	719.4	SILT with organics, dark brown, moist (OL)	TOPSOIL									
1		LEAN CLAY, brown, soft (CL)	FINE ALLUVIUM	4	M	SS	18					
	718.4											
2		SAND, fine grained, brown, moist, loose to medium dense (SP)	COARSE ALLUVIUM									
3				7	M	SS	18					3
4												
5												
6				11	M	SS	18					
7												
8				6	M	SS	18					
9	710.6				▼							
10		SILTY SAND, fine grained, brown, waterbearing, loose (SM)		7	W	SS	16					
11												
12	708.1											
		SAND, fine to medium grained, brown, waterbearing, loose (SP)										
13				7	W	SS	14					
14												
15				5	W	SS	16					
16												
17	703.1											
		End of boring at 17.0 feet. Monitoring well GW-1 installed.										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-17.0'	**4.25" HSA**								
		5/19/20	**1130**	**11.5**	**9.5**	**9.8**	**None**	**9.2**	
		5/19/20	**1136**	**11.5**	**9.5**	**9.5**	**None**	**9.0**	
BORING COMPLETED:	**5/19/20**								
DR: **MH**	LG: **AT** Rig: **67**								

AET_CORP W-ELEV 12-21119.GPJ AET+CPT+WELL.GDT 6/11/20

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **12-21119** Log of Boring No. **B-2 (p. 1 of 1)**

Project: **Stormwater Management Plan; River Valley School District; Spring Green, Wisconsin**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **720.1** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	719.1	SILTY CLAY with organics, dark brown (CL-ML)	TOPSOIL									
1		LEAN CLAY, mottled brown and gray, soft (CL)	FINE ALLUVIUM	4	M	SS	16					
3	717.1	SILTY SAND, fine grained, brown, moist, loose (SM)	COARSE ALLUVIUM	8	M	SS	20					
4	715.6	SAND WITH SILT, fine to medium grained, brown, moist, loose, with lenses of silt (SP-SM)		7	M	SS	16					6
7	713.1	SAND, fine grained, brown, moist to waterbearing, medium dense (SP)		11	M/W	SS	18					
9	710.6	SAND, fine to medium grained, brown, waterbearing, very loose to loose (SP)		4	W	SS	16					
13				1	W	SS	14					
15				5	W	SS	16					
16	703.6	*End of boring at 16.5 feet*										

DEPTH: DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-14.5' 3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
	5/19/20	**0918**	**11.5**	**9.5**	**9.3**	**None**	**9.1**	
	5/19/20	**0924**	**11.5**	**9.5**	**8.9**	**None**	**8.5**	
BORING COMPLETED: **5/19/20**								
DR: **MH** LG: **AT** Rig: **67**								

AET_CORP W-ELEV 12-21119.GPJ AET+CPT+WELL.GDT 6/11/20

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **12-21119** Log of Boring No. **B-3 (p. 1 of 1)**

Project: **Stormwater Management Plan; River Valley School District; Spring Green, Wisconsin**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **722.7** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	721.2	Sandy SILT with organics, dark brown, moist (OL)	TOPSOIL	2	M	SS	18					
2	720.7	SILT with sand, brown, moist (ML)	FINE ALLUVIUM									
3		LEAN CLAY with sand, brown, stiff (CL)		11	M	SS	18					
4	718.2											
5		SILTY CLAY with sand, mottled brown and gray, stiff (CL-ML)		12	M	SS	20					
6	716.7											
7	715.7	SILTY SAND, fine grained, brown, moist, medium dense (SM)	COARSE ALLUVIUM									
8		SAND WITH SILT, fine grained, brown, moist, medium dense, with lenses of silt (SP-SM)		14	M	SS	16					11
9	713.2											
10		SAND, fine to medium grained, brown, moist to waterbearing, loose to medium dense (SP)		15	M	SS	16					
11												
12					▼							
13				5	W	SS	16					
14												
15				6	W	SS	16					
16	706.2											
		End of boring at 16.5 feet										

DEPTH: **0-14.5'** DRILLING METHOD: **3.25" HSA**

BORING COMPLETED: **5/19/20**

DR: **MH** LG: **AT** Rig: **67**

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
5/19/20	**1324**	**16.5**	**14.5**	**13.0**	**None**	**12.2**
5/19/20	**1329**	**16.5**	**14.5**	**12.8**	**None**	**12.0**

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV 12-21119.GPJ AET+CPT+WELL.GDT 6/11/20

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **12-21119** Log of Boring No. **B-4 (p. 1 of 1)**

Project: **Stormwater Management Plan; River Valley School District; Spring Green, Wisconsin**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **719.9** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
0		SILT with sand and organics, dark brown, moist (OL)	TOPSOIL									
1	718.9	SILT with sand, brown, moist, loose (ML)	FINE ALLUVIUM	8	M	SS						
2	717.9	SILTY SAND, fine grained, brown, moist, loose (SM)	COARSE ALLUVIUM									
3	717.4	Sandy LEAN CLAY, mottled brown and gray, firm (CL)	FINE ALLUVIUM	6	M	SS	14					61
4	715.4											
5		SILTY SAND, fine grained, mottled brown and gray, wet, loose, with lenses of silt (SM)	COARSE ALLUVIUM									
6	714.4	SAND, fine to medium grained, brown, moist to waterbearing, very loose to loose (SP)		8	W/M	SS	18					
7												
8				5	M/W	SS	14					
9												
10												
11				4	W	SS	18					
12												
13				3	W	SS	18					
14												
15												
16				WH	W	SS	12					
17	702.9	*End of boring at 17.0 feet. Monitoring well GW-2 installed.*										

DEPTH:	DRILLING METHOD
0-17.0'	**4.25" HSA**

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
5/19/20	**1603**	**11.5**	**9.5**	**10.1**	**None**	**8.6**
5/19/20	**1609**	**11.5**	**9.5**	**9.2**	**None**	**8.4**

BORING COMPLETED: **5/19/20**

DR: **MH** LG: **AT** Rig: **67**

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV 12-21119.GPJ AET+CPT+WELL.GDT 6/11/20

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **12-21119** Log of Boring No. **B-5 (p. 1 of 1)**

Project: **Stormwater Management Plan; River Valley School District; Spring Green, Wisconsin**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **718.3** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
	717.6	SILTY CLAY with organics, dark brown (OL)	TOPSOIL									
1	717.0	LEAN CLAY with sand, dark brown and brown (CL)	FINE ALLUVIUM	4	M	SS	18					
2		SILTY SAND, fine grained, dark brown and brown, moist, very loose to loose (SM)	COARSE ALLUVIUM									
3				9	M	SS	22					24
4	713.8				▼							
5		SAND, fine to medium grained, brown, waterbearing, very loose to medium dense (SP)		14	W	SS	16					
6												
7												
8				6	W	SS	16					
9												
10												
11				3	W	SS	16					
12	706.3	*End of boring at 12.0 feet. Boring terminated due to caving borehole conditions. Monitoring well GW-3 installed.*										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-12.0'	**4.25" HSA**	**5/19/20**	**1418**	**6.5**	**4.5**	**4.9**	**None**	**4.6**
		5/19/20	**1423**	**6.5**	**4.5**	**4.8**	**None**	**4.4**
BORING COMPLETED: **5/19/20**								
DR: **MH** LG: **AT** Rig: **67**								

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV 12-21119.GPJ AET+CPT+WELL.GDT 6/11/20

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: River Valley School District	Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W.	Well Name: B-1/GW-1
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 43.177327°N ___" Long. 90.076965°W ___" or	Wis. Unique Well No.: WA575 / DNR Well ID No.: ___
Facility ID: ___	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 05 / 19 / 2020 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: ___ 1/4 of ___ 1/4 of Sec, ___, T. ___ N, R. ___ ☐ E. ☐ W.	Well Installed By: Name (first, last) and Firm: Michael Hofstedt, American Engineering Testing, Inc.
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known / Gov. Lot Number: _____	

A. Protective pipe, top elevation 720.3 ft. MSL

B. Well casing, top elevation 719.9 ft. MSL

C. Land surface elevation 720.1 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 0.5 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☒ 41 / Other ☐ ___

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):
Local Potable Well

E. Bentonite seal, top _____ ft. MSL or 0.5 ft.

F. Fine sand, top _____ ft. MSL or 1.3 ft.

G. Filter pack, top _____ ft. MSL or 3.3 ft.

H. Screen joint, top _____ ft. MSL or 5.3 ft.

I. Well bottom _____ ft. MSL or 15.3 ft.

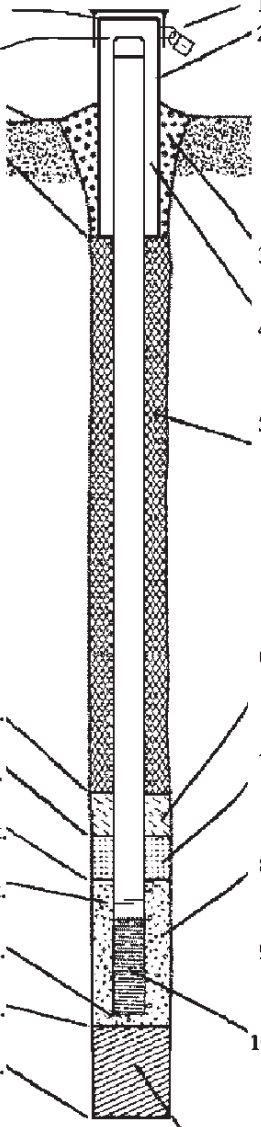
J. Filter pack, bottom _____ ft. MSL or 15.3 ft.

K. Borehole, bottom _____ ft. MSL or 17.0 ft.

L. Borehole, diameter 8.0 in.

M. O.D. well casing 2.37 in.

N. I.D. well casing 1.9 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 5.5 in.
b. Length: 1 ft.
c. Material: Aluminum — Steel ☐ 04 / Other ☒ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: _____ — Bentonite ☐ 30 / Concrete ☒ 01 / Other ☐ ___

4. Material between well casing and protective pipe: _____ — Bentonite ☒ 30 / Other ☐ ___

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 0.35 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #15
b. Volume added 0.5 ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #40
b. Volume added 3.0 ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ ___

10. Screen material: PVC
a. Screen type: Factory cut ☐ 11 / Continuous slot ☒ 01 / Other ☐ ___
b. Manufacturer Johnson Screens
c. Slot size: 0.01 in.
d. Slotted length: 10.0 ft.

11. Backfill material (below filter pack): Native Cave-In — None ☐ 14 / Other ☒ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Benjamin Mattson — Firm: American Engineering Testing, Inc.

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: River Valley School District	Local Grid Location of Well: _____ ft. ☐ N. ☐ S. _____ ft. ☐ E. ☐ W.	Well Name: B-4/GW-2	
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☒ Lat. 43.179168°N ___" Long. 90.077828°W ___" or	Wis. Unique Well No.: WA576	DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 05 / 19 / 2020 (m m d d y y y y)	
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: ___ 1/4 of ___ 1/4 of Sec. ___, T. ___ N, R. ___ ☐ E ☐ W	Well Installed By: Name (first, last) and Firm: Michael Hofstedt	
Distance from Waste/Source _____ ft.	Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: _____
			American Engineering Testing, Inc.

A. Protective pipe, top elevation 720.1 ft. MSL

B. Well casing, top elevation 719.7 ft. MSL

C. Land surface elevation 719.9 ft. MSL

D. Surface seal, bottom _____ ft. MSL or 0.5 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☒ 41 Other ☐ ___

15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):
Local Potable Well

E. Bentonite seal, top _____ ft. MSL or 0.5 ft.

F. Fine sand, top _____ ft. MSL or 1.5 ft.

G. Filter pack, top _____ ft. MSL or 3.5 ft.

H. Screen joint, top _____ ft. MSL or 5.5 ft.

I. Well bottom _____ ft. MSL or 15.5 ft.

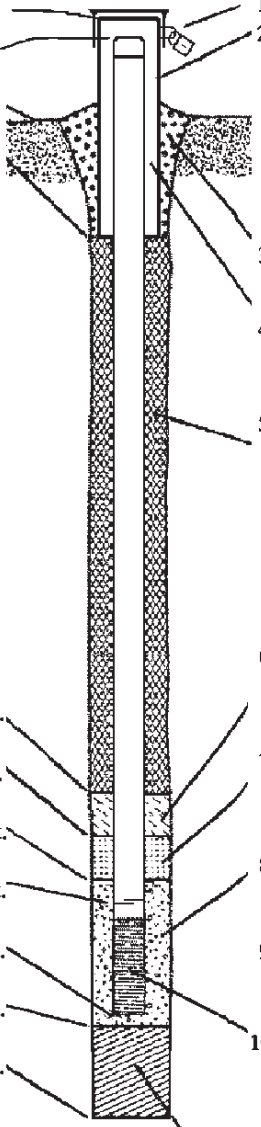
J. Filter pack, bottom _____ ft. MSL or 15.5 ft.

K. Borehole, bottom _____ ft. MSL or 17.0 ft.

L. Borehole, diameter 8.0 in.

M. O.D. well casing 2.37 in.

N. I.D. well casing 1.9 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 5.5 in.
b. Length: 1 ft.
c. Material: Aluminum Steel ☐ 04 Other ☒ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____

3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐ ___

4. Material between well casing and protective pipe: Bentonite ☒ 30 Other ☐ ___

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 0.35 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ___

7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #15
b. Volume added 0.5 ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #40
b. Volume added 3.0 ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 Flush threaded PVC schedule 80 ☐ 24 Other ☐ ___

10. Screen material: PVC
a. Screen type: Factory cut ☐ 11 Continuous slot ☒ 01 Other ☐ ___
b. Manufacturer Johnson Screens
c. Slot size: 0.01 in.
d. Slotted length: 10.0 ft.

11. Backfill material (below filter pack): None ☐ 14
Native Cave-In Other ☒ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Benjamin Mattson	American Engineering Testing, Inc.

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name River Valley School District	**Local Grid Location of Well** ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. _____ ft.	**Well Name** B-5/GW-3
Facility License, Permit or Monitoring No.	**Local Grid Origin** ☐ (estimated: ☐) or **Well Location** ☒ Lat. 43.181256°N ___" Long. 90.078623°W ___" or	**Wis. Unique Well No.** WA577	**DNR Well ID No.**
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	**Date Well Installed** 05 / 19 / 2020 (m m d d y y y y)	
Type of Well Well Code 11 / MW	**Section Location of Waste/Source** ___ 1/4 of ___ 1/4 of Sec, ___ T. ___ N, R. ___ ☐ E ☐ W	**Well Installed By: Name (first, last) and Firm** Michael Hofstedt American Engineering Testing, Inc.	
Distance from Waste/ Source _____ ft. **Enf. Stds. Apply** ☐	**Location of Well Relative to Waste/Source** u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	**Gov. Lot Number**	

A. Protective pipe, top elevation 718.5 ft. MSL

B. Well casing, top elevation 718.1 ft. MSL

C. Land surface elevation 718.3 ft. MSL

D. Surface seal, bottom ____ ft. MSL or 0.5 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☒ 41
Other ☐ ___

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
Local Potable Well

E. Bentonite seal, top ____ ft. MSL or 0.5 ft.

F. Fine sand, top ____ ft. MSL or 0.7 ft.

G. Filter pack, top ____ ft. MSL or 1.2 ft.

H. Screen joint, top ____ ft. MSL or 2.2 ft.

I. Well bottom ____ ft. MSL or 12.2 ft.

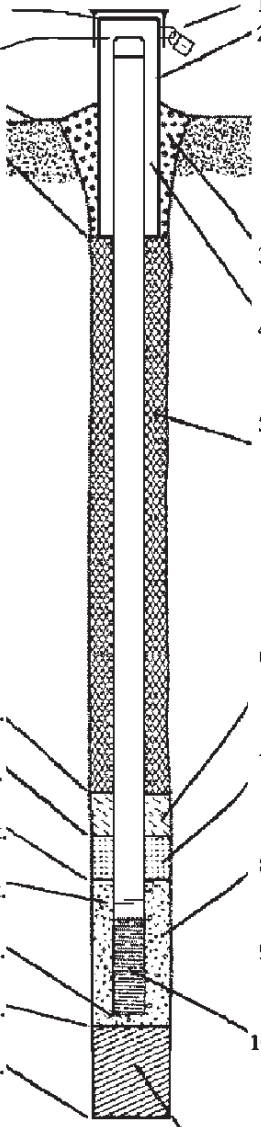
J. Filter pack, bottom ____ ft. MSL or 12.2 ft.

K. Borehole, bottom ____ ft. MSL or 12.5 ft.

L. Borehole, diameter 8.0 in.

M. O.D. well casing 2.37 in.

N. I.D. well casing 1.9 in.

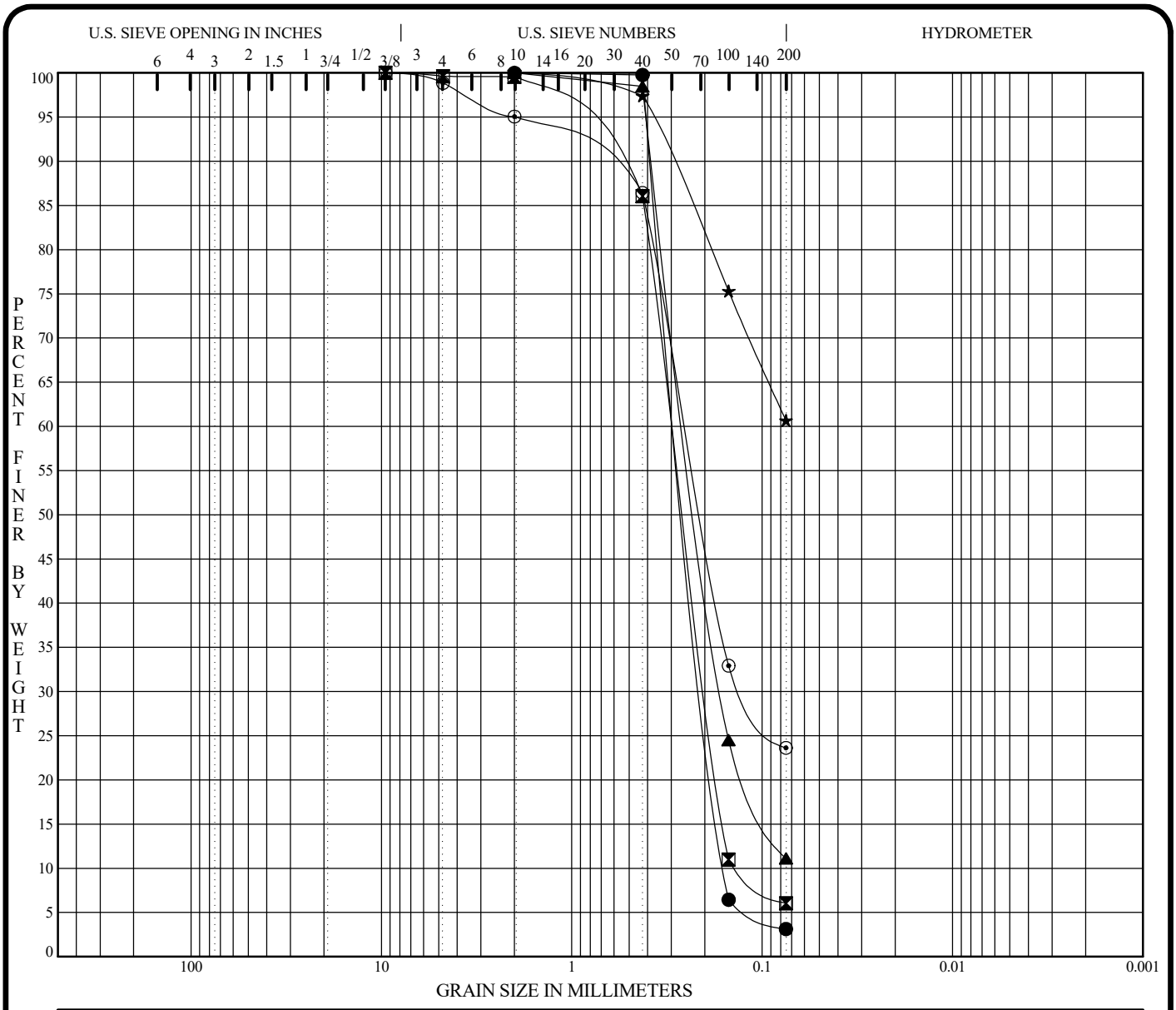


1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 5.5 in.
b. Length: 1 ft.
c. Material: Steel ☐ 04
Aluminum Other ☒ ___
d. Additional protection? ☐ Yes ☒ No
If yes, describe: _____
3. Surface seal: Bentonite ☐ 30
Concrete ☒ 01
Other ☐ ___
4. Material between well casing and protective pipe:
Bentonite ☒ 30
Other ☐ ___
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 0.15 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01
Tremie pumped ☐ 02
Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ___
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #15 ___
b. Volume added 0.125 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #40 ___
b. Volume added 2.75 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐ ___
10. Screen material: PVC ___
a. Screen type: Factory cut ☐ 11
Continuous slot ☒ 01
Other ☐ ___
b. Manufacturer Johnson Screens
c. Slot size: 0.01 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☐ 14
Native Cave-In Other ☒ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Benjamin Mattson	American Engineering Testing, Inc.

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
● **B-1**	**3.0'**	**Sand, fine grained (SP)**					**0.89**	**1.7**
⧓ **B-2**	**5.5'**	**Sand with silt, fine to medium grained (SP-SM)**					**0.98**	**2.3**
▲ **B-3**	**8.0'**	**Sand with silt, fine grained (SP-SM)**					**1.50**	**3.5**
★ **B-4**	**3.3'**	**Sandy lean clay (CL)**						
⊙ **B-5**	**3.0'**	**Silty sand, fine grained (SM)**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **B-1**	**3.0'**	**2.00**	**0.27**	**0.195**	**0.1561**	**0.0**	**96.9**	**3.1**	
⧓ **B-2**	**5.5'**	**9.50**	**0.30**	**0.195**	**0.1308**	**0.4**	**93.6**	**6.0**	
▲ **B-3**	**8.0'**	**2.00**	**0.25**	**0.162**		**0.0**	**88.9**	**11.1**	
★ **B-4**	**3.3'**	**2.00**				**0.0**	**39.3**	**60.7**	
⊙ **B-5**	**3.0'**	**9.50**	**0.25**	**0.121**		**1.1**	**75.2**	**23.6**	

PROJECT **Stormwater Management Plan; River Valley School District; Spring Green, Wisconsin**

AET JOB NO. **12-21119**

DATE **5/19/20**

AMERICAN ENGINEERING TESTING, INC.

GRADATION CURVES

Wis. Dept. of Safety and Professional Services
Division of Safety and Buildings

SOIL EVALUATION - STORM

in accordance with SPS 382.365 and 385, Wis. Adm. Code

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and BM referenced to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s. 15.04 (1) (m)).

County: Sauk

Parcel I.D.:

Reviewed by: Date:

Property Owner	Property Location
River Valley School District	Govt. Lot *** 1/4 SE 1/4 S 12 T 8 N R 3E E (or) W
Property Owner's Mailing Address: 660 W. Daley Street	Lot #: Block #: Subd. Name or CSM#:
City: Spring Green / State: WI / Zip Code: 53588 / Phone Number: (608) 588-2551	☐ City ■ Village ☐ Town / Nearest Road: 660 Varsity Boulevard
	Spring Green

Drainage area _____ ☐ sq. ft. ☐ acres

Optional:

Test Site Suitable for (check all that apply)

☐ Irrigation ☐ Bioretention trench ☐ Trench(es)

☐ Rain garden ☐ Grassed swale ☐ Reuse

☐ Infiltration trench ☐ SDS (> 15' wide) ☐ Other _____

Hydraulic Application Test Method:

■ Morphological Evaluation

☐ Double-Ring Infiltrometer

☐ Other (specify) _____

B-1 Obs. # ■ Boring ☐ Pit Ground surface elev. 720.1 ft. Depth to limiting factor 108 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr
1	0-8	10YR 2/2	---	sil	0,m	m,fi	a,w	<5	0.13
2	8-20	10YR 3/6	---	c	0,m	m,fi	a,w	<5	0.07
3	20-54	10YR 4/6	---	s*	0,sg	m,lo	a,w	<5	0.50*
4	54-84	10YR 6/6	---	s*	0,sg	m,lo	a,w	<5	0.50*
5	84-114	10YR 5/4	--- (GW at 9.0 feet)	s*	0,sg	m,lo	a,w	<5	0.50*
6	114-144	10YR 4/4	---	ls*	0,sg	m,lo	a,w	<5	0.50*
7	144-198	10YR 4/4	---	s	0,sg	m,lo	---	<5	3.60

B-2 Obs. # ■ Boring ☐ Pit Ground surface elev. 720.1 ft. Depth to limiting factor 12 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr
1	0-12	10YR 2/1	---	sic	0,m	m,fi	a,w	<5	0.07
2	12-36	10YR 4/4	c, 1-2, D, 10YR 5/2	c	0,m	m,fi	a,w	<5	0.07
3	36-54	10YR 4/4	---	ls*	0,sg	m,lo	a,w	<5	0.50*
4	54-84	10YR 5/4	---	s/sil**	0,sg	m,lo	a,w	<5	3.60/0.13**
5	84-114	10YR 4/4	--- (GW at 8.5 feet)	s*	0,sg	m,lo	a,w	<5	0.50*
6	114-198	10YR 4/4	---	s	0,sg	m,lo	---	<5	3.60

CST/PSS Name (Please Print): Benjamin B. Mattson

Signature:

CST/PSS Number: 1131386

Address: 4203 Schofield Avenue Suite 1, Schofield WI 54476

Date Evaluation Conducted: May 19, 2020

Telephone Number: (715) 359-3534

Property Owner River Valley School Dist Parcel ID # _____ Page 2 of 3

B-3 Obs. # ■ Boring ☐ Pit Ground surface elev. 722.7 ft. Depth to limiting factor 54 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr
1	0-18	10YR 2/1	---	sil	0,m	m,fi	a,w	<5	0.13
2	18-24	10YR 4/3	---	sil	0,m	m,fi	a,w	<5	0.13
3	24-54	7.5YR 3/4	---	c	0,m	m,fi	a,w	<5	0.07
4	54-72	7.5YR 4/4	m, 2-3, D, 7.5YR 5/2	sic	0,m	m,fi	a,w	<5	0.07
5	72-84	10YR 5/6	---	ls*	0,sg	m,lo	a,w	<5	0.50*
6	84-112	10YR 6/6	---	s*/sil**	0,sg	m,lo	a,w	<5	0.50*/0.13**
7	112-198	10YR 4/4	--- (GW at 12.0 feet)	s	0,sg`	m,lo	---	<5	3.60

B-4 Obs. # ■ Boring ☐ Pit Ground surface elev. 719.9 ft. Depth to limiting factor 30 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr
1	0-12	10YR 2/1	---	sil	0,m	m,fi	a,w	<5	0.13
2	12-24	10YR 3/4	---	sil	0,m	m,fi	a,w	<5	0.13
3	24-30	10YR 4/6	---	sl	0,sg	m,lo	a,w	<5	0.50
4	30-54	10YR 5/3	m, 2-3, D, 10YR 4/6	c	0,m	m,fi	a,w	<5	0.07
5	54-66	10YR 4/4	m, 2-3, F, 10YR 5/3	sl/sil**	0,sg	m,lo	a,w	<5	0.50/0.13**
6	66-84	10YR 6/6	---	s	0,sg	m,lo	g,w	<5	3.60
7	84-198	10YR 4/4	--- (GW at 8.4 feet)	s	0,sg	m,lo	---	<5	3.60

B-5 Obs. # ■ Boring ☐ Pit Ground surface elev. 718.3 ft. Depth to limiting factor 53 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr
1	0-8	10YR 2/1	---	sic	0,m	m,fi	a,w	<5	0.07
2	8-16	10YR 4/4	---	c	0,m	m,fi	a,w	<5	0.07
3	16-24	10YR 3/3	---	sl	0,sg	m,lo	a,w	<5	0.50
4	24-54	10YR 3/3	--- (GW at 4.4 feet)	ls*	0,sg	m,lo	a,w	<5	0.50*
5	54-144	10YR 4/4	---	s	0,sg	m,lo	---	<5	3.60

☐ Obs. # ☐ Boring ☐ Pit Ground surface elev. _____ ft. Depth to limiting factor _____ in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr

☐ Obs. # ☐ Boring ☐ Pit Ground surface elev. _____ ft. Depth to limiting factor _____ in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	Hydraulic App. Rate Inches/Hr

Test Results and/or Summary Comments

The installation of monitoring wells for obtaining additional groundwater measurements was beyond our scope of services.

* Per Wisconsin DSPS, the sandy loam infiltration rate is used for fine sand and loamy fine sand soil textures. These layers are marked by an asterisk in the texture and hydraulic app rate columns.

** Layers had silt lenses

*** Borings B-1 and B-2 were drilled in the SE 1/4 of the SE 1/4

*** Boring B-3 was drilled in the SW 1/4 of the SE 1/4

*** Borings B-4 and B-5 were drilled in the NE 1/4 of the SE 1/4

Appendix B

AET Project No. 12-21119

Geotechnical Report Limitations and Guidelines for Use

Appendix B
Geotechnical Report Limitations and Guidelines for Use
AET Project No. 12-21119

B.1 REFERENCE

This appendix provides information to help you manage your risks relating to subsurface problems which are caused by construction delays, cost overruns, claims, and disputes. This information was developed and provided by GBA[1], of which, we are a member firm.

B.2 RISK MANAGEMENT INFORMATION

B.2.1 Geotechnical Services are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And no one, not even you, should apply the report for any purpose or project except the one originally contemplated.

B.2.2 Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

B.2.3 A Geotechnical Engineering Report is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typically, factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, always inform your geotechnical engineer of project changes, even minor ones, and request an assessment of their impact. Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.

B.2.4 Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. Do not rely on a geotechnical engineering report whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

1 Geoprofessional Business Association, 15800 Crabbs Branch Way, Suite 300, Rockville, MD 20855
Telephone: 301/565-2733: www.geoprofessional.org

B.2.5 Most Geotechnical Findings Are Professional Opinions
Site exploration identified subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

B.2.6 A Report's Recommendations Are Not Final
Do not over-rely on the construction recommendations included in your report. Those recommendations are not final, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

B.2.7 A Geotechnical Engineering Report Is Subject to Misinterpretation
Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

B.2.8 Do Not Redraw the Engineer's Logs
Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognizes that separating logs from the report can elevate risk.

B.2.9 Give Contractors a Complete Report and Guidance
Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, but preface it with a clearly written letter of transmittal. In the letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

B.2.10 Read Responsibility Provisions Closely
Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their report. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

B.2.11 Geoenvironmental Concerns Are Not Covered
The equipment, techniques, and personnel used to perform a geoenvironmental study differ significantly from those used to perform a geotechnical study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Unanticipated environmental problems have led to numerous project failures. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. Do not rely on an environmental report prepared for someone else.