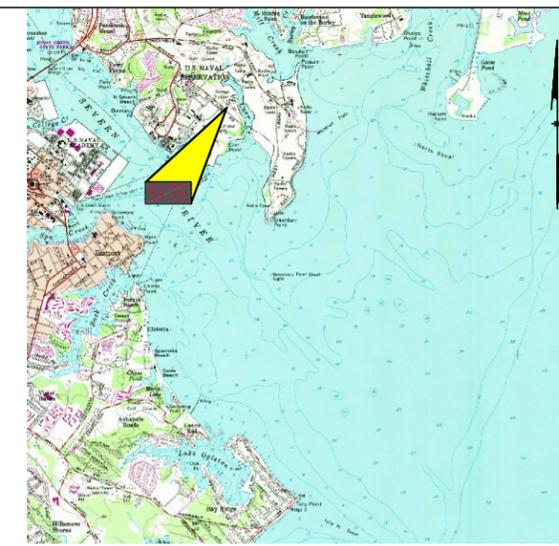
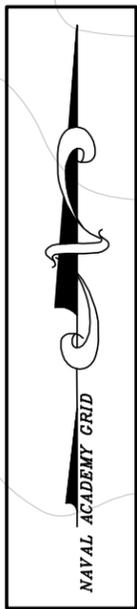


# **APPENDIX A**

## **SITE AND TEST BORING LOCATION SKETCH**



LOCATION MAP  
ANNAPOLIS QUAD  
N.T.S.

**LEGEND**

- B-1 TEST BORING LOCATION
- BORINGS B-1 THRU B-3 PERFORMED ON 10/11/12.

**GENERAL NOTES**

THE SUBSURFACE CONDITIONS REVEALED BY THIS STUDY REPRESENT CURRENT CONDITIONS AT THE SPECIFIED TEST LOCATIONS ONLY AND MAY NOT BE INDICATIVE OF CONDITIONS AT OTHER LOCATIONS.

Pennoni Associates Inc. Christiana Executive Campus 121 Continental Drive, Suite 207 Newark, DE 19713	ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	DRAWN BY: TJQ	SCALE: N.T.S.	DATE: 10/25/12
	CHECKED BY:	SKETCH No.	<h1>TL-1</h1> <p>377/569</p>	
	JOB No. NAVY 1234			
<b>BORING LOCATION PLAN</b>				

# **APPENDIX B**

## **TEST BORING LOGS (3)**

**PROJECT:** US Naval Academy (North Severn) WWTP      **PROJECT NO.:** NAVY1234  
**PROJECT LOCATION:** Annapolis, MD  
**DRILLING FIRM:** Connelly & Associates      **ELEVATION:** 18.37 ft NAVD88  
**FOREMAN:** Curtis Wolfe      **LOGGED BY:** R. Van Derzee  
**DRILLING METHOD:** Hollow Stem Auger (3-1/4" ID)  
**DATE STARTED:** 10/11/12      **DATE COMPLETED:** 10/11/12  
**DEPTH TO WATER> INITIAL:** 18.5 ft      **AFTER 24 HOURS:** NM      **CAVING>** C 16.0 ft



**LOG OF BORING  
No. B-1**

Depth (feet)	Description	Graphic	Stratum	Sample No.	Recovery (in.)	Blow Counts	Remarks
0	3" TOPSOIL: Brown fine to medium sand, some silt, trace organics		T1	S-1	16	3-7-7	
0.25	Orange fine to medium to coarse SAND, trace silt, trace organics			S-2	17	4-7-8	
	Light tan to light gray SILT and fine SAND, trace organics			S-3	17	3-5-7	
	Light orange brown fine SAND and SILT, little medium sand, moist						
	Orange brown to gray brown fine to medium SAND, little silt, moist			S-4	17	5-6-8	
10	Red brown to gray brown fine SAND, some silt, little medium sand, trace coarse sand, moist						
	Red brown to orange brown to gray brown fine to medium to coarse SAND, some silt, wet			S-5	18	2-4-4	
20	Red brown to gray brown fine to medium SAND, some silt, saturated		A	S-6	18	3-4-6	
	SAME			S-7	21	4-8-11	
30	Gray brown fine to medium SAND, little silt, dark red brown fine to medium sand mottles, saturated			S-8	21	5-6-8	
	Gray brown to red brown fine to medium SAND, little silt, saturated			S-9	21	3-10-11	
	Boring terminated at 35 ft.						
40							
50							
60							
70							

Coordinates: 481813.19 North, 1465774.12 East  
Elevation and coordinates taken from survey performed by PHR&A.

**PROJECT:** US Naval Academy (North Severn) WWTP      **PROJECT NO.:** NAVY1234  
**PROJECT LOCATION:** Annapolis, MD  
**DRILLING FIRM:** Connelly & Associates      **ELEVATION:** 15.43 ft NAVD88  
**FOREMAN:** Curtis Wolfe      **LOGGED BY:** R. Van Derzee  
**DRILLING METHOD:** Hollow Stem Auger (3-1/4" ID)  
**DATE STARTED:** 10/11/12      **DATE COMPLETED:** 10/11/12  
**DEPTH TO WATER> INITIAL:** 12.0 ft      **AFTER 24 HOURS:** NM      **CAVING>** C 18.0 ft



**LOG OF BORING  
No. B-2**

Depth (feet)	Description	Graphic	Stratum	Sample No.	Recovery (in.)	Blow Counts	Remarks
0	3" TOPSOIL: Brown silt and fine sand, trace organics		T1	S-1	13	3-4-4	
0.25	Brown to gray brown fine SAND and SILT			S-2	21	4-5-8	
	Brown to gray brown fine SAND, some silt, trace medium sand, moist			S-3	21	4-5-7	
	Orange brown fine to medium SAND, little silt, moist						
10	Red brown fine to medium SAND, little silt, moist			S-4	16	5-7-6	
	Red brown to gray brown fine to medium SAND, some silt, saturated			S-5	15	3-3-4	
20	Gray brown fine SAND, little medium sand, little silt, orange brown and red brown fine sand mottles, saturated		A	S-6	21	5-6-9	
	Gray brown to red brown fine SAND, little silt, trace medium sand saturated			S-7	13	5-9-11	
30	Gray brown to orange brown fine to medium SAND, little silt, red brown fine sand and silt mottles, saturated			S-8	18	8-9-11	
	Red brown to gray brown to orange brown fine to medium SAND, some silt, saturated			S-9	14	3-12-16	
40	Boring terminated at 35 ft.						
50							
60							
70							

Coordinates: 482010.80 North, 1465525.43 East  
Elevation and coordinates taken from survey performed by PHR&A.

**PROJECT:** US Naval Academy (North Severn) WWTP      **PROJECT NO.:** NAVY1234  
**PROJECT LOCATION:** Annapolis, MD  
**DRILLING FIRM:** Connelly & Associates      **ELEVATION:** 22.39 ft NAVD88  
**FOREMAN:** Curtis Wolfe      **LOGGED BY:** R. Van Derzee  
**DRILLING METHOD:** Hollow Stem Auger (3-1/4" ID)  
**DATE STARTED:** 10/11/12      **DATE COMPLETED:** 10/11/12  
**DEPTH TO WATER> INITIAL:** 16.0 ft      **AFTER 24 HOURS:** NM      **CAVING>** C 25.0 ft



**LOG OF BORING  
No. B-3**

Depth (feet)	Description	Graphic	Stratum	Sample No.	Recovery (in.)	Blow Counts	Remarks
0	12" BITUMINOUS CONCRETE and BASE		T2	S-1	12	18-14-6	
	Orange brown fine SAND and SILT			S-2	6	6-8-9	
	SAME			S-3	17	4-5-5	
	Light orange brown to tan SILT, some fine sand						
10	Orange to orange brown fine to medium SAND, little silt, moist			S-4	16	6-6-7	
	SAME			S-5	18	3-6-6	
	Orange brown to red brown to gray brown fine to medium to coarse SAND, little silt, moist						
20	Dark orange brown to red brown fine to medium to coarse SAND, little silt, saturated		A	S-6	21	3-3-5	
	Red brown fine SAND, some silt, orange brown to gray brown fine to medium sand mottles, saturated			S-7	18	3-5-7	
30	Red brown to dark gray brown fine to medium SAND, little silt, saturated			S-8	17	9-10-14	
	Gray brown to dark orange brown fine to medium to coarse SAND, trace silt, saturated			S-9	21	3-6-5	
40	Boring terminated at 35 ft.						
50							
60							
70							

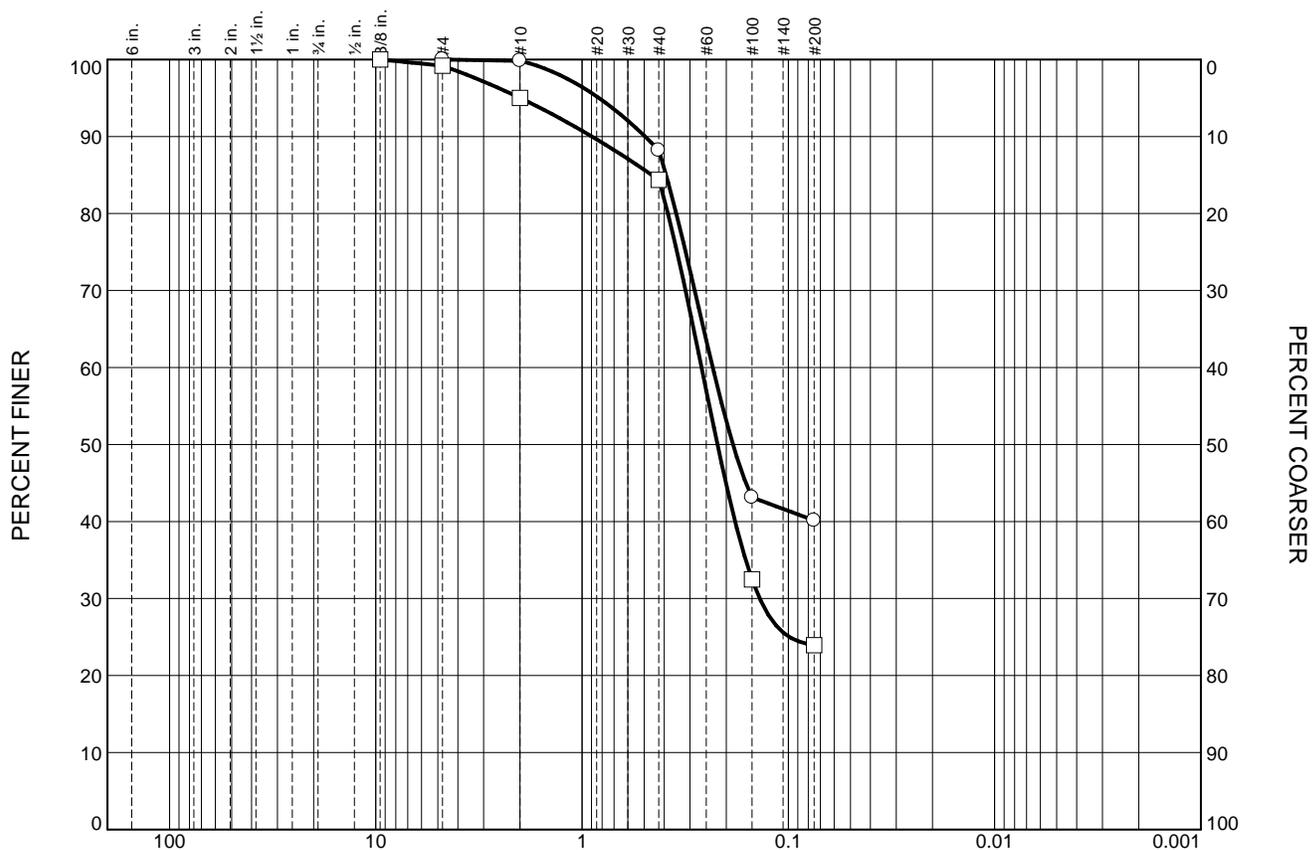
Coordinates: 481789.23 North, 1465356.24 East  
Elevation and coordinates taken from survey performed by PHR&A.

# **APPENDIX C**

## **GEOTECHNICAL LABORATORY TEST RESULTS**



# Particle Size Distribution Report



GRAIN SIZE - mm.

Symbol	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.2	11.6	48.1	40.1	
□	0.0	0.0	0.8	4.2	10.6	60.5	23.9	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1	S-2	2.5-4 ft	MC SAND AND FINES	SM
□	B-1	S-4	8.5-10 ft	FMC SAND, SOME FINES	SM

**PENNONI ASSOCIATES INC.**

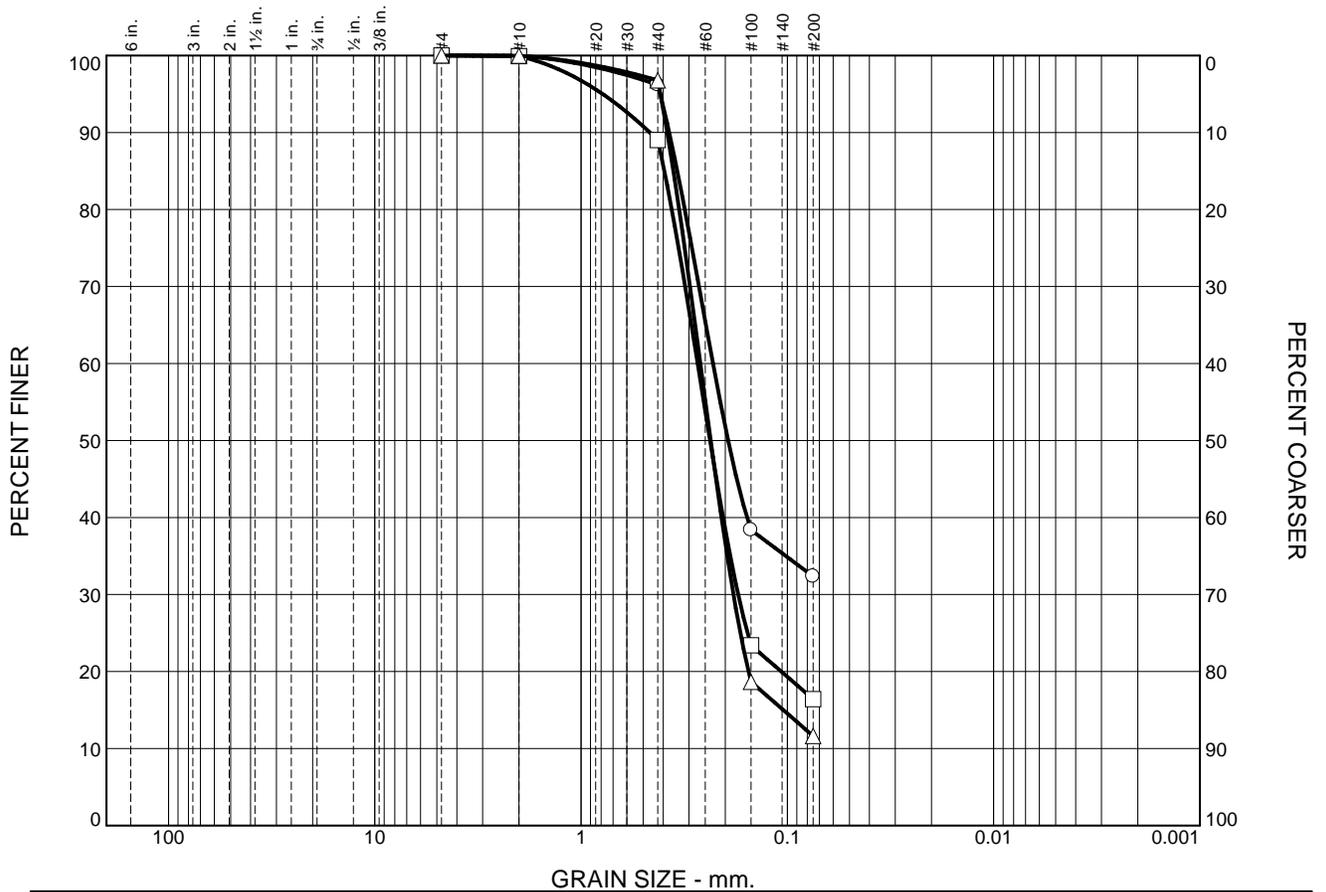
**Bethlehem, PA**

Client: NAVFAC WASHINGTON  
Project: WWTP - NSA ANNAPOLIS

Project No.: NAVY-1234.00

Figure S-1

# Particle Size Distribution Report



	GRAIN SIZE - mm.							
	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	3.8	63.8	32.4	
□	0.0	0.0	0.0	0.1	10.9	72.6	16.4	
△	0.0	0.0	0.0	0.0	3.2	85.2	11.6	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2	S-2	2.5-4 ft	FM SAND, SOME FINES	SM
□	B-2	S-6	18.5-20 ft	FM SAND, LITTLE FINES	SM
△	B-2	S-7	23.5-25 ft	FM SAND, LITTLE FINES	SP-SM

**PENNONI ASSOCIATES INC.**

**Bethlehem, PA**

Client: NAVFAC WASHINGTON  
Project: WWTP - NSA ANNAPOLIS

Project No.: NAVY-1234.00

Figure S-2