LOG OF BORING

Project: Sand Search for DMPAs
Project No.: HG-05-28280
Boring No.: B-2
Date: 2/13/2006
Elevation: 15.65 feet
Groundwater during drilling: ---
Northing: 13,699,063.0
Station: --
Groundwater after drilling: ---
Easting: 3,302,811.0
Offset: --

ELEV. DEPTH, FEET	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	SOIL/ROCK CLASSIFICATION	% PASSING NO. 200 SIEVE	DRY DENSITY PCF
15 / 0	2-2-3	Grayish brown SAND (SP)	4	
10 / 5	2-2-3	Grayish brown SAND w/ silt (SP-SM)	12	
5 / 10	1	Grayish brown CLAYEY SAND (SC)	22	
0 / 15		Very dark greenish gray CLAY (CH)	88	
-5 / 20				
-10 / 25				
-15 / 30				
35				

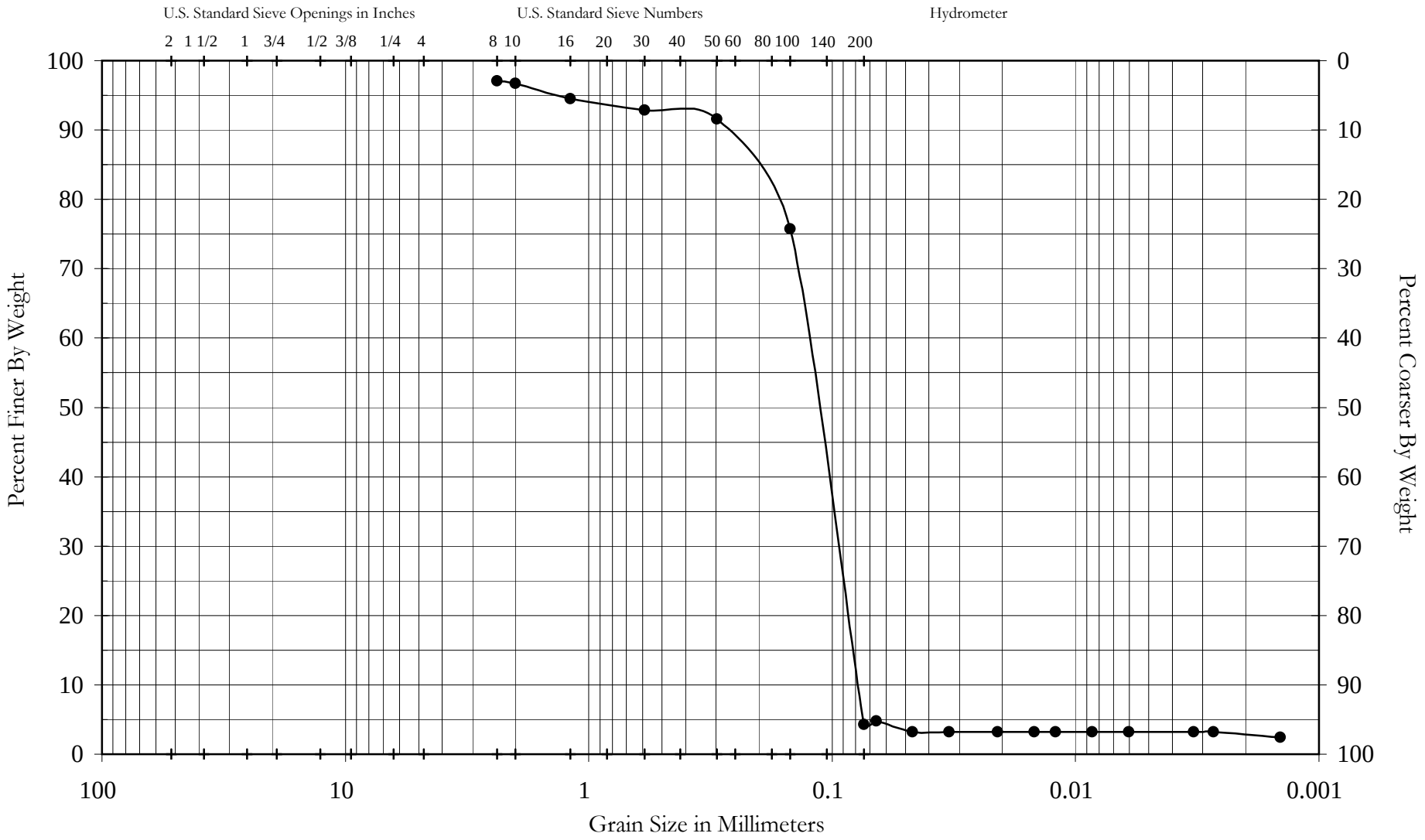
SHEAR STRENGTH, TSF
0.5 1.0 1.5 2.0
MOISTURE ○ CONTENT, %
PLASTIC LIMIT — LIQUID LIMIT
10 20 30 40 50 60 70 80 90

Shear Types: ● = Hand Penet. ■ = Torvane ▲ = Unconf. Comp. ✳ = UU Triaxial

PLATE A-2

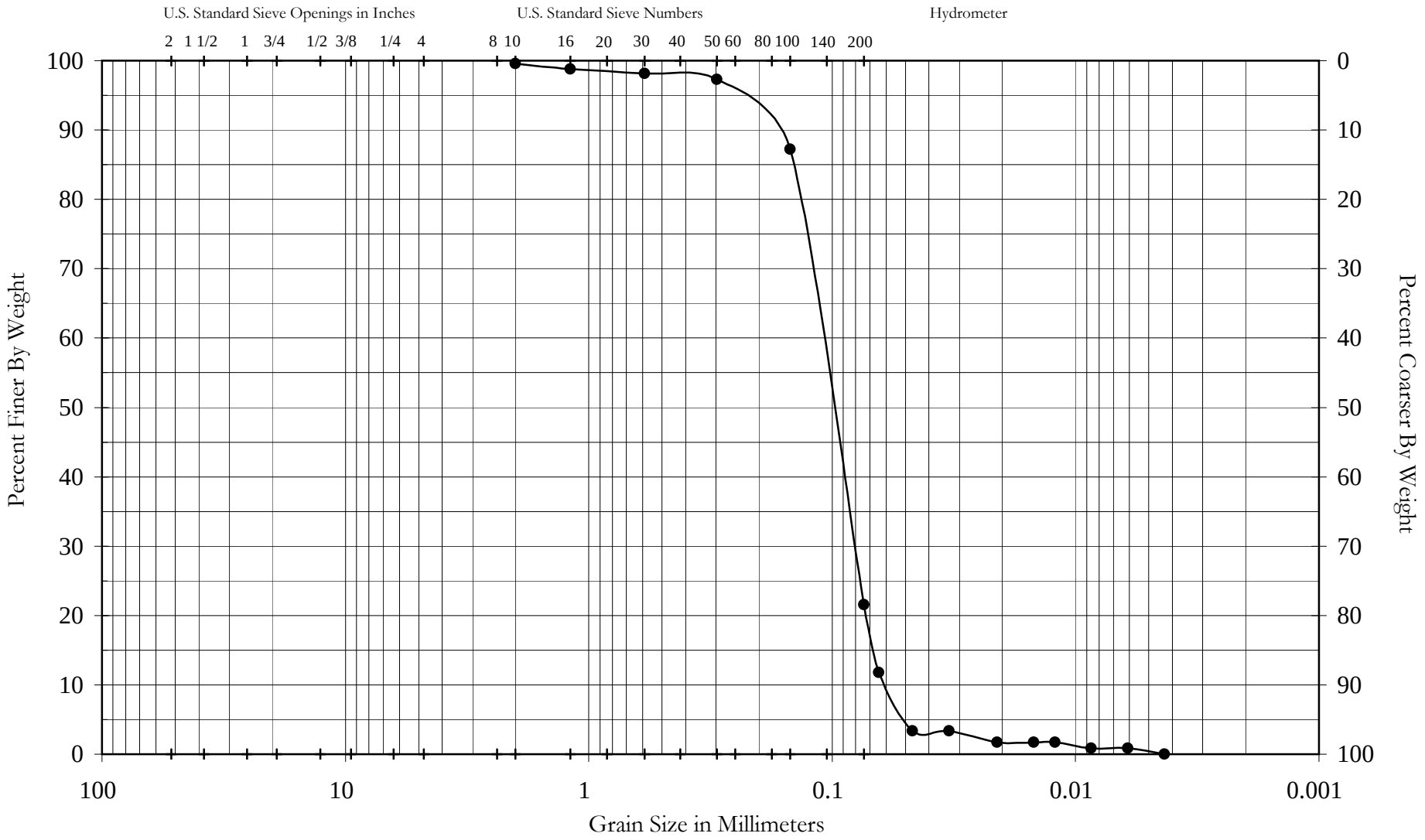
LOG OF SOIL BORING HG-05-28280.GPJ HVJ.GDT 2/21/06

HVJ ASSOCIATES



Boring No.	Depth, Ft.	Classification
B-2	0-2'	Grayish brown Sand

PLATE C-3



Boring No.	Depth, Ft.	Classification
B-2	4-6'	Grayish brown Clayey sand

PLATE C-4

SIEVE ANALYSIS DATA

Project:	Sand Search	Job No.	HG-05-28280	Date:	02/15/06
Boring No.	2	Sample No.	1	Depth:	0-2'
Matl Desc.	Grayish brown Sand				

Tare No.	11	Init Wt. - Tare	47.03	% Ret.	95.73
Tare Wt.	**6.65**	**Dry Wt. after test**	**51.67**	% Pass #200	4.27
Init. Dry Wt.	**53.68**	Wt. Ret. on #200	45.02		

Sieve Size/No.	Sieve Size (mm)	Weight Ret.	% Retained	% Passing
8	2.38	1.39	2.96	97.04
10	2	1.54	3.27	96.73
16	1.19	2.57	5.46	94.54
30	0.59	3.37	7.17	92.83
50	0.297	3.96	8.42	91.58
100	0.149	11.41	24.26	75.74
200	0.074	45.02	95.73	4.27
	0.066			4.79
	0.047			3.20
	0.033			3.20
	0.021			3.20
	0.015			3.20
	0.012			3.20
	0.009			3.20
	0.006			3.20
	0.003			3.20
	0.003			3.20
	0.001			2.40

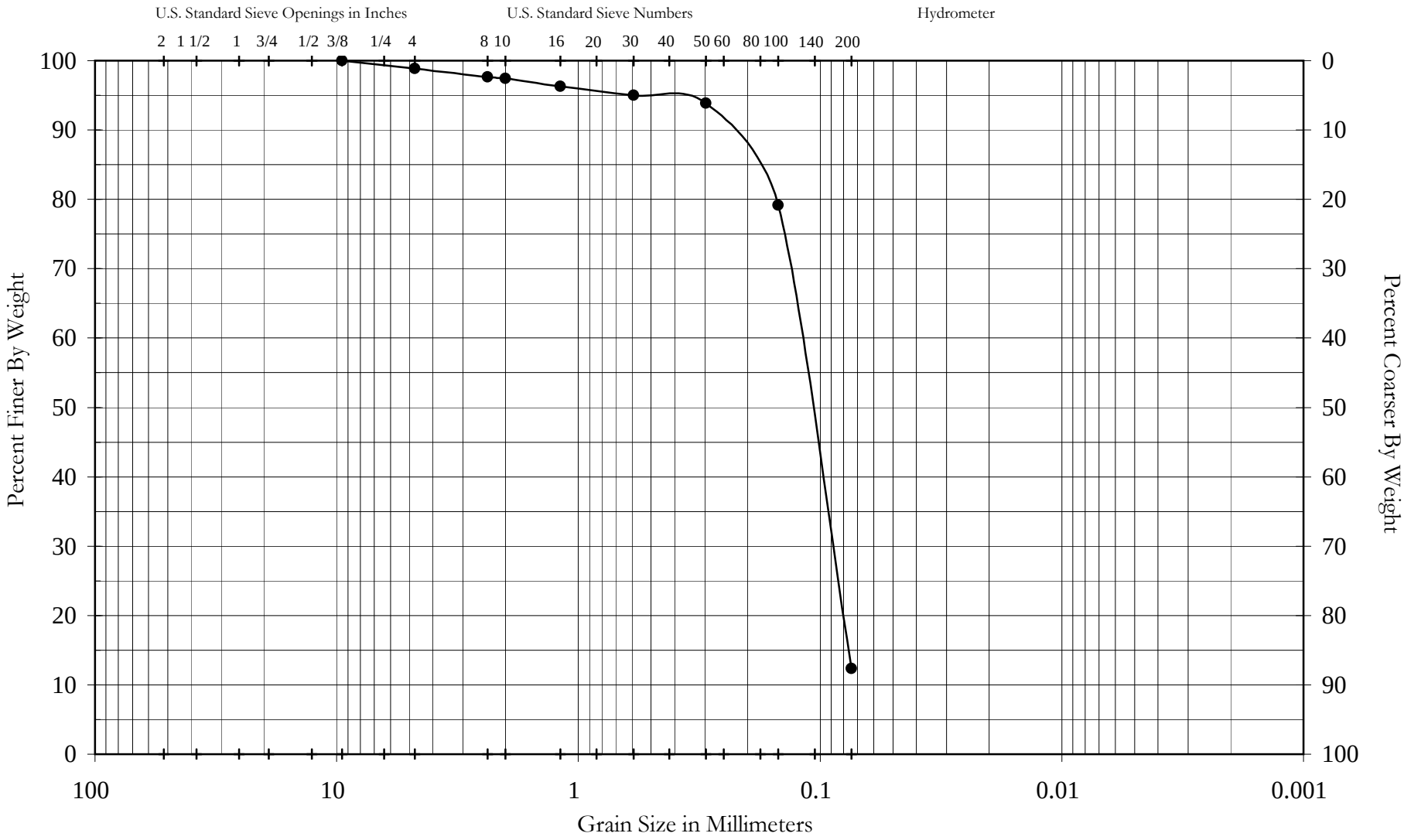
PLATE C-3b

SIEVE ANALYSIS DATA

Project:	Sand Search	Job No.	HG-05-28280	Date:	02/15/06
Boring No.	2	Sample No.	3	Depth:	4-6'
Matl Desc.	Grayish brown Clayey sand				

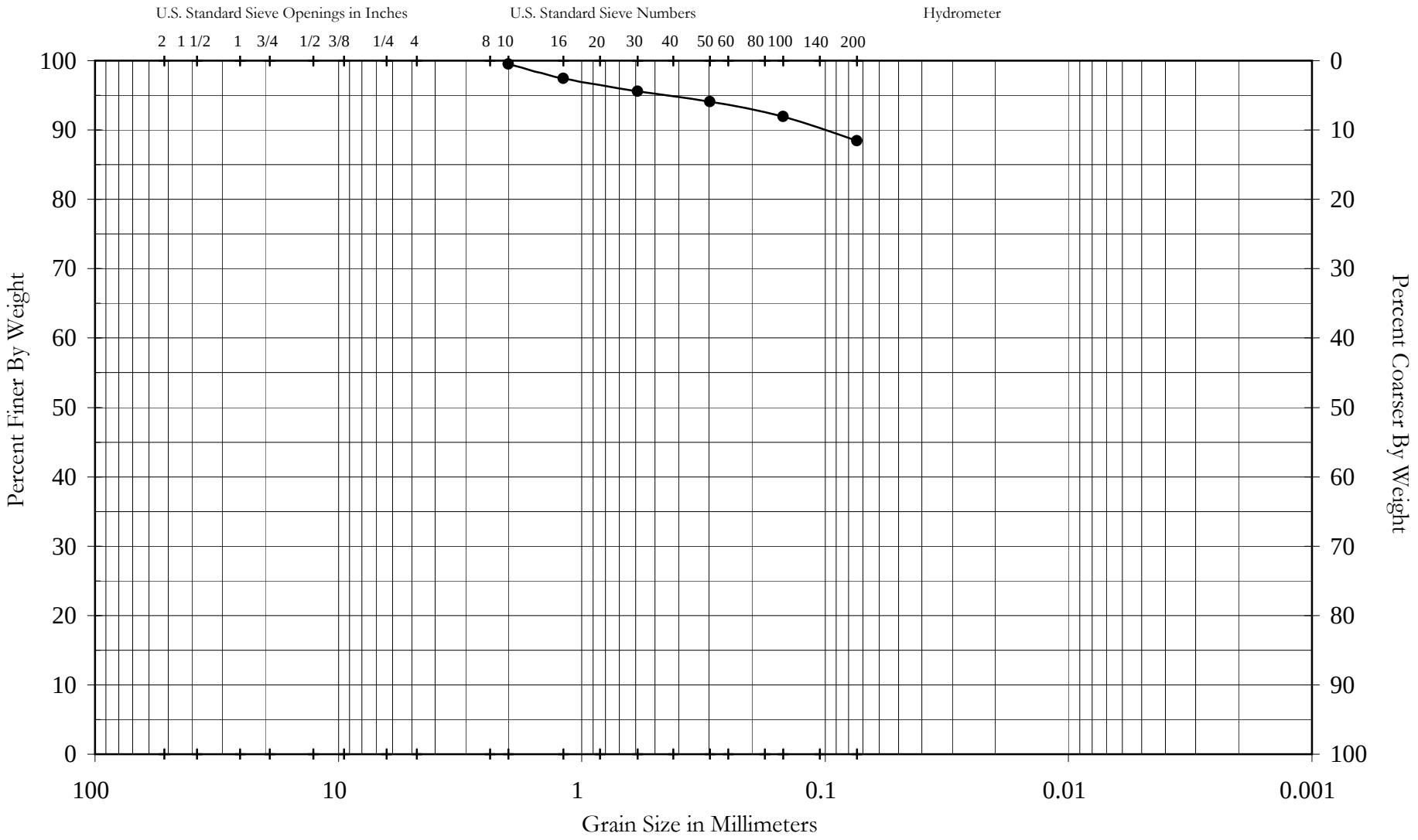
Tare No.	3	Init Wt. - Tare	37.09	% Ret.	78.46
Tare Wt.	**6.72**	**Dry Wt. after test**	**35.82**	% Pass #200	21.54
Init. Dry Wt.	**43.81**	Wt. Ret. on #200	29.10		

Sieve Size/No.	Sieve Size (mm)	Weight Ret.	% Retained	% Passing
10	2	0.17	0.46	99.54
16	1.19	0.44	1.19	98.81
30	0.59	0.69	1.86	98.14
50	0.297	1.01	2.72	97.28
100	0.149	4.75	12.81	87.19
200	0.074	29.10	78.46	21.54
	0.064			11.80
	0.047			3.37
	0.033			3.37
	0.021			1.69
	0.015			1.69
	0.012			1.69
	0.009			0.84
	0.006			0.84
	0.004			0



Boring No.	Depth, Ft.	Classification
B-2	2-4'	Grayish brown Sand with silt

PLATE D-3



Boring No.	Depth, Ft.	Classification
B-2	6-8'	Very dark grayish gray Clay

PLATE D-4

SIEVE ANALYSIS DATA

Project:	Sand Search	Job No.	HG-05-28280	Date:	02/15/06
Boring No.	2	Sample No.	2	Depth:	2-4'
Matl Desc.	Grayish brown Sand with silt				

Tare No.	51	Init Wt. - Tare	100.73	% Ret.	87.65
Tare Wt.	**6.75**	**Dry Wt. after test**	**95.04**	% Pass #200	12.35
Init. Dry Wt.	**107.48**	Wt. Ret. on #200	88.29		

Sieve Size/No.	Sieve Size (mm)	Weight Ret.	% Retained	% Passing
3/8"	9.5	0.00	0.00	100.00
4	4.76	1.16	1.15	98.85
8	2.38	2.35	2.33	97.67
10	2	2.61	2.59	97.41
16	1.19	3.72	3.69	96.31
30	0.59	5.06	5.02	94.98
50	0.297	6.15	6.11	93.89
100	0.149	20.99	20.84	79.16
200	0.074	88.29	87.65	12.35

PLATE D-3b

SIEVE ANALYSIS DATA

Project:	Sand Search	Job No.	HG-05-28280	Date:	02/15/06
Boring No.	2	Sample No.	4	Depth:	6-8'
Matl Desc.	Very dark grayish gray Clay				

Tare No.	3	Init Wt. - Tare	37.09	% Ret.	11.57
Tare Wt.	**6.72**	**Dry Wt. after test**	**11.01**	% Pass #200	88.43
Init. Dry Wt.	**43.81**	Wt. Ret. on #200	4.29		

Sieve Size/No.	Sieve Size (mm)	Weight Ret.	% Retained	% Passing
10	2	0.18	0.49	99.51
16	1.19	0.94	2.53	97.47
30	0.59	1.64	4.42	95.58
50	0.297	2.21	5.96	94.04
100	0.149	3.00	8.09	91.91
200	0.074	4.29	11.57	88.43

PLATE D-4b

Work Order No. 1306-06-001
Dredged Material Placement Area (DMPA)
Pelican Island Geotechnical investigation
GLO Contract No. 06-090C
Requisition No. 317-6-0482

February 13, 2006

Sample Analysis Performed by: TAMUG
Grain Size Analysis Performed by: GBA, Associates

Hole No:	2	Sample No:	2C	Depth:	2-3 ft

Note: Enter data in to the green cells

Sieve Size, (No.)	Sieve Size, (mm)	Cumulative Weight Retained on Sieve, (grams)	Weight Retained on Sieve, (grams)	Phi, f	% Coarser by Weight	% Finer than by Weight
10	2	1.57	1.57	-1.0	1.63%	98.37%
14	1.41	2.45	0.88	-0.5	2.54%	97.46%
18	1	3.19	0.74	0.0	3.31%	96.69%
25	0.71	3.79	0.6	0.5	3.93%	96.07%
35	0.5	4.45	0.66	1.0	4.61%	95.39%
45	0.354	5.23	0.78	1.5	5.42%	94.58%
60	0.25	7.02	1.79	2.0	7.28%	92.72%
80	0.177	16.87	9.85	2.5	17.49%	82.51%
125	0.125	55.21	38.34	3.0	57.22%	42.78%
170	0.088	76.68	21.47	3.5	79.48%	20.52%
200	0.074	88.35	11.67	3.8	91.57%	8.43%
230	0.0625	93.62	5.27	4.0	97.04%	2.96%
Pan	0.0039	96.48	2.86	8.0	100.00%	0.00%

Total Weight of Sediment = **96.48** grams

Median Sand Size: Diameter formulas must be adjusted for accurate percentage, formulas are interpolation equations

D_{50} =	0.13	D_{16} =	0.29	D_{84} =	0.04
ϕ_{50} =	2.9	ϕ_{16} =	1.8	ϕ_{84} =	4.7
		D_5 =	0.27	D_{95} =	0.01
		ϕ_5 =	1.9	ϕ_{95} =	6.1

Mean:

	PHI	mm
$M_{d\phi} = (\phi_{16+}\phi_{84})/2$ =	3.3	0.1

Standard Deviation:

$\sigma_\phi = (\phi_{84} - \phi_{16})/4+(\phi_{95}-\phi_5)/6$ =	1.4	Poorly Sorted

σ_ϕ <= 0.5: Sample is well sorted.
σ_ϕ >= 1.0: Sample is poorly sorted.

Skewness:

$\alpha_\phi = (\phi_{16} + \phi_{84}-(2*\phi_{50}))/(2(\phi_{84} - \phi_{16})+(\phi_5 + \phi_{95}-(2*\phi_{50}))/(2(\phi_{95} - \phi_5)$ =	-0.4	Coarse-Skewed

α_ϕ < -0.1: Sample is Coarse-Skewed
α_ϕ -0.1 to +0.1: Sample is Near-Symmetrical
α_ϕ > +0.1: Sample is Fine-Skewed

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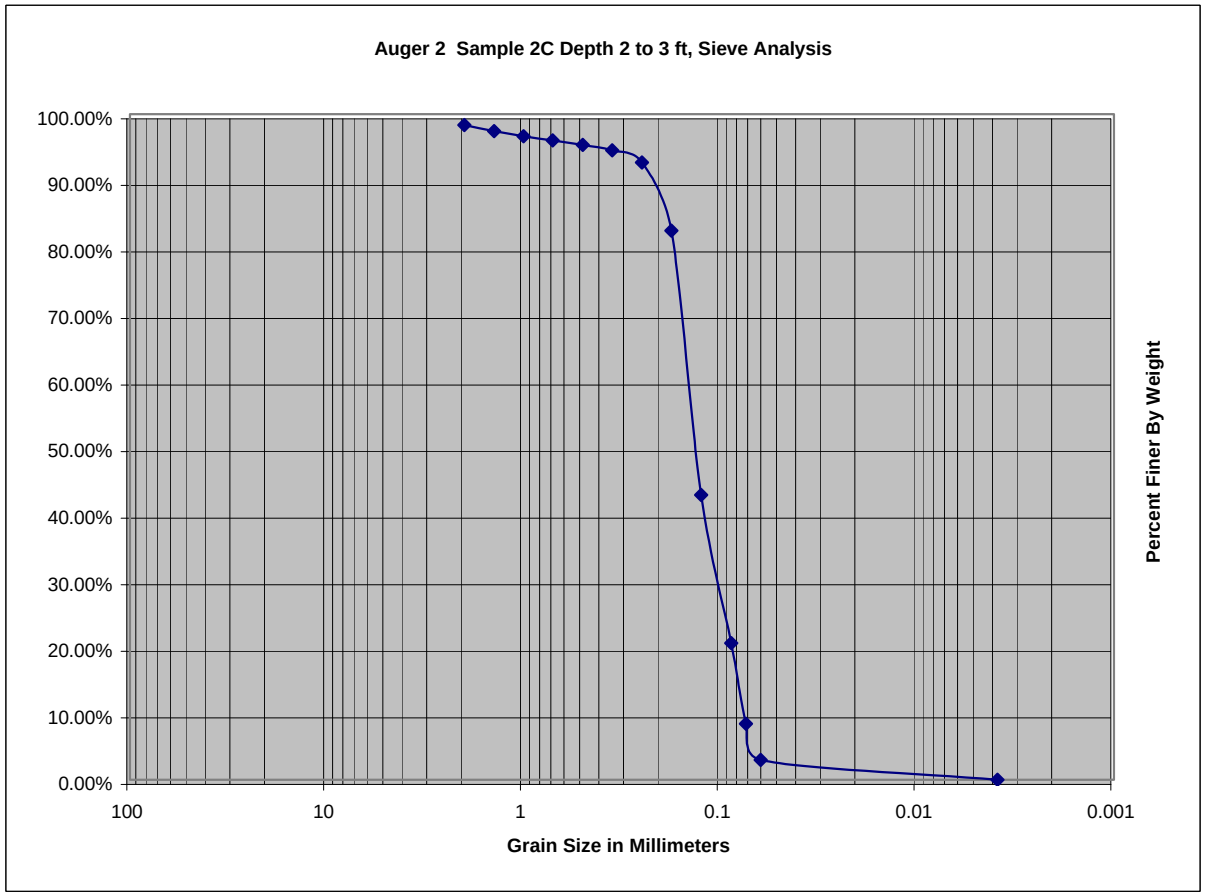

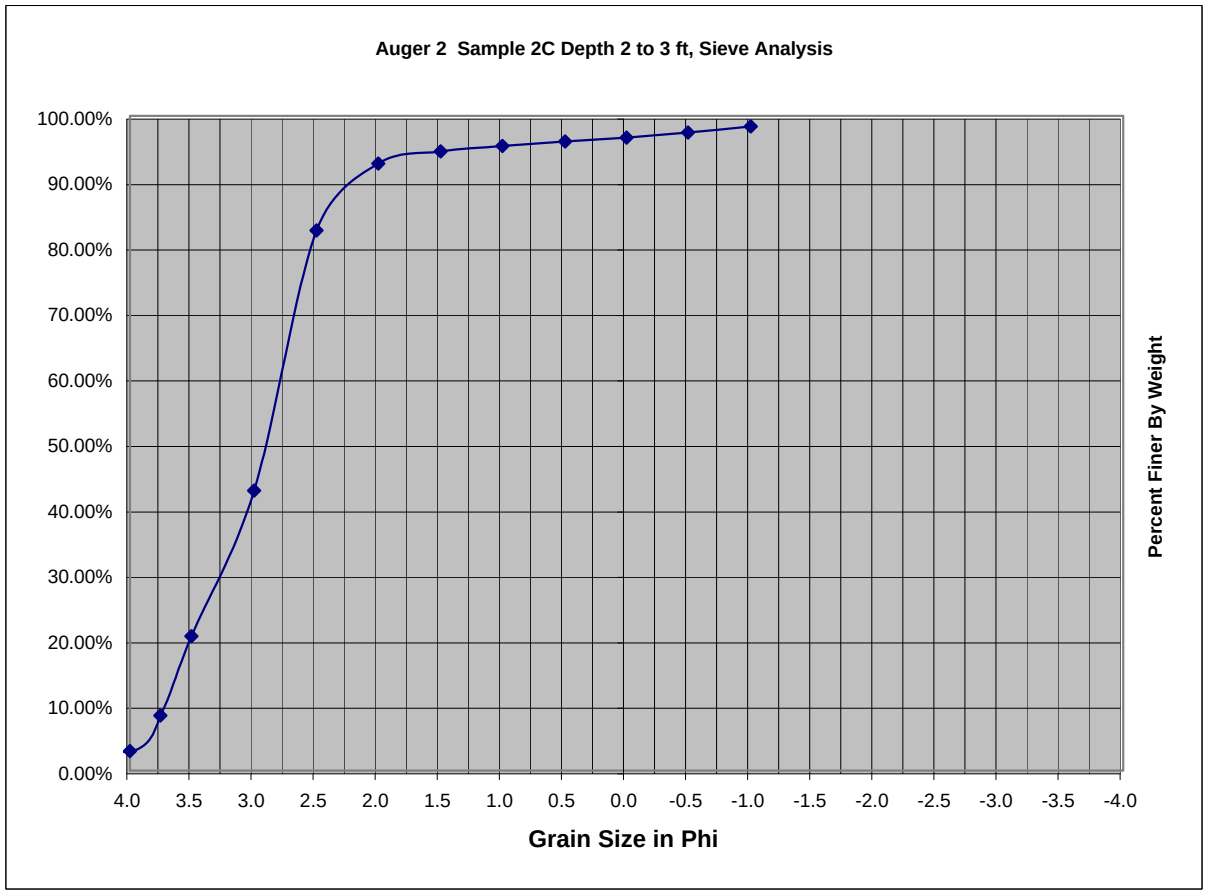
Auger 2 Sample 2C Depth 2 to 3 ft, Sieve Analysis
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
Grain Size in Phi
Percent Finer By Weight

Work Order No. 1306-06-001
Dredged Material Placement Area (DMPA)
Pelican Island Geotechnical investigation
GLO Contract No. 06-090C
Requisition No. 317-6-0482

February 13, 2006

Sample Analysis Performed by: TAMUG
Grain Size Analysis Performed by: GBA, Associates

Hole No:	2	Sample No:	2B	Depth:	1-2 ft

Note: Enter data in to the green cells

Sieve Size, (No.)	Sieve Size, (mm)	Cumulative Weight Retained on Sieve, (grams)	Weight Retained on Sieve, (grams)	Phi, f	% Coarser by Weight	% Finer than by Weight
10	2	14.58	14.58	-1.0	13.42%	86.58%
14	1.41	20.98	6.4	-0.5	19.31%	80.69%
18	1	26.13	5.15	0.0	24.05%	75.95%
25	0.71	30.35	4.22	0.5	27.94%	72.06%
35	0.5	33.75	3.4	1.0	31.07%	68.93%
45	0.354	35.61	1.86	1.5	32.78%	67.22%
60	0.25	37.87	2.26	2.0	34.86%	65.14%
80	0.177	43.63	5.76	2.5	40.16%	59.84%
125	0.125	89.79	46.16	3.0	82.66%	17.34%
170	0.088	104.25	14.46	3.5	95.97%	4.03%
200	0.074	107.19	2.94	3.8	98.67%	1.33%
230	0.0625	108.34	1.15	4.0	99.73%	0.27%
Pan	0.0039	108.63	0.29	8.0	100.00%	0.00%

Total Weight of Sediment = **108.63** grams

Median Sand Size: Diameter formulas must be adjusted for accurate percentage, formulas are interpolation equations

D_{50} =	0.16	D_{16} =	0.61	D_{84} =	0.05
ϕ_{50} =	2.6	ϕ_{16} =	0.7	ϕ_{84} =	4.3
		D_5 =	0.66	D_{95} =	0.02
		ϕ_5 =	0.6	ϕ_{95} =	5.8

Mean:

	PHI	mm
$M_{d\phi} = (\phi_{16+}\phi_{84})/2$ =	2.5	0.2

Standard Deviation:

$\sigma_\phi = (\phi_{84} - \phi_{16})/4+(\phi_{95}-\phi_5)/6$ =	1.8	Poorly Sorted

σ_ϕ <= 0.5: Sample is well sorted.
σ_ϕ >= 1.0: Sample is poorly sorted.

Skewness:

$\alpha_\phi = (\phi_{16} + \phi_{84}-(2*\phi_{50}))/(2(\phi_{84} - \phi_{16})+(\phi_5 + \phi_{95}-(2*\phi_{50}))/(2(\phi_{95} - \phi_5)$ =	
-0.1	Near-Symmetrical

α_ϕ < -0.1: Sample is Coarse-Skewed
α_ϕ -0.1 to +0.1: Sample is Near-Symmetrical
α_ϕ > +0.1: Sample is Fine-Skewed

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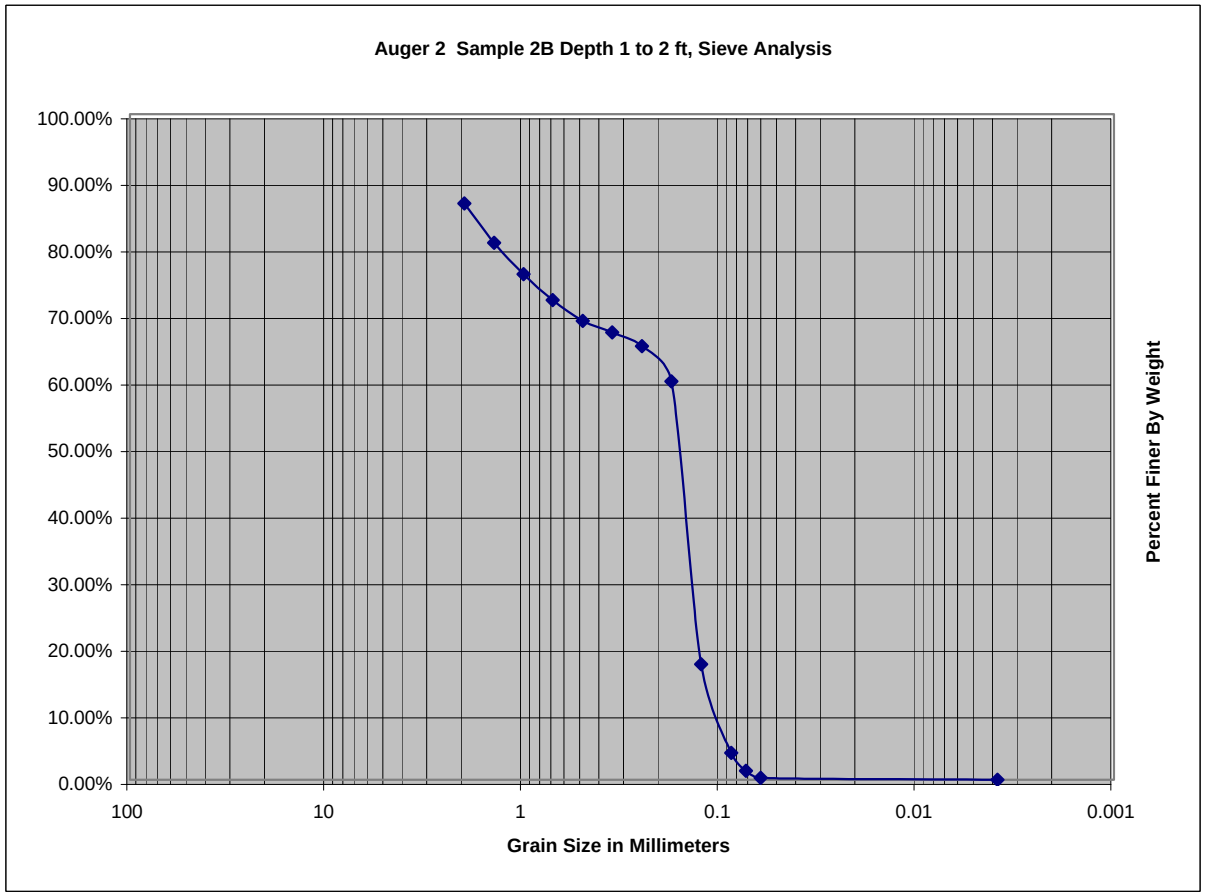

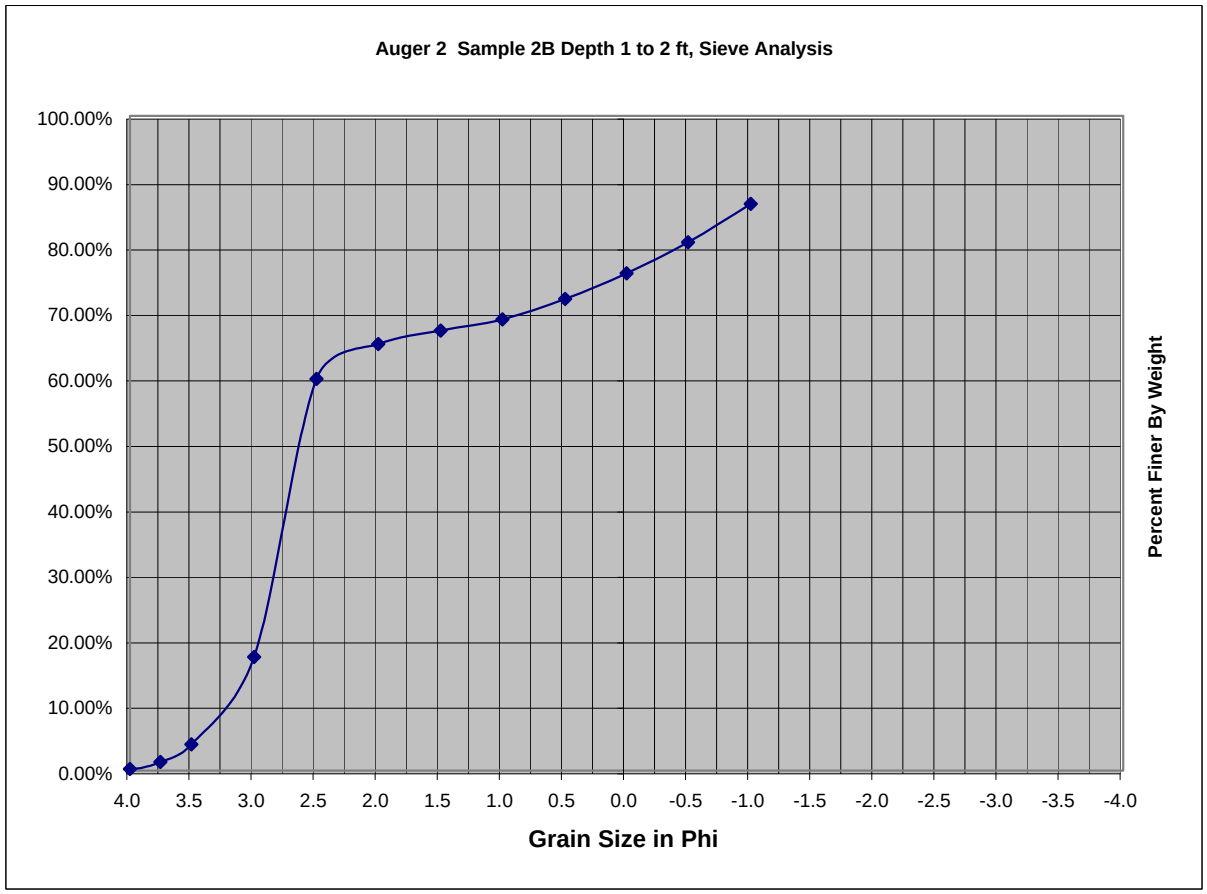
Auger 2 Sample 2B Depth 1 to 2 ft, Sieve Analysis
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
Grain Size in Phi
Percent Finer By Weight

Work Order No. 1306-06-001
Dredged Material Placement Area (DMPA)
Pelican Island Geotechnical investigation
GLO Contract No. 06-090C
Requisition No. 317-6-0482

February 13, 2006

Sample Analysis Performed by: TAMUG
Grain Size Analysis Performed by: GBA, Associates

Hole No:	2	Sample No:	2A	Depth:	0-1 ft

Note: Enter data in to the green cells

Sieve Size, (No.)	Sieve Size, (mm)	Cumulative Weight Retained on Sieve, (grams)	Weight Retained on Sieve, (grams)	Phi, f	% Coarser by Weight	% Finer than by Weight
10	2	0.06	0.06	-1.0	0.05%	99.95%
14	1.41	0.08	0.02	-0.5	0.07%	99.93%
18	1	0.09	0.01	0.0	0.08%	99.92%
25	0.71	0.1	0.01	0.5	0.09%	99.91%
35	0.5	0.12	0.02	1.0	0.11%	99.89%
45	0.354	0.19	0.07	1.5	0.17%	99.83%
60	0.25	0.59	0.4	2.0	0.52%	99.48%
80	0.177	7.6	7.01	2.5	6.70%	93.30%
125	0.125	96.68	89.08	3.0	85.20%	14.80%
170	0.088	110.26	13.58	3.5	97.17%	2.83%
200	0.074	112.87	2.61	3.8	99.47%	0.53%
230	0.0625	113.31	0.44	4.0	99.86%	0.14%
Pan	0.0039	113.47	0.16	8.0	100.00%	0.00%

Total Weight of Sediment = **113.47** grams

Median Sand Size: Diameter formulas must be adjusted for accurate percentage, formulas are interpolation equations

D_{50} =	0.15	D_{16} =	0.17	D_{84} =	0.03
ϕ_{50} =	2.8	ϕ_{16} =	2.5	ϕ_{84} =	4.9
		D_5 =	0.20	D_{95} =	0.01
		ϕ_5 =	2.3	ϕ_{95} =	6.2

Mean:

	PHI	mm
$M_{d\phi} = (\phi_{16+}\phi_{84})/2$ =	3.7	0.1

Standard Deviation:

$\sigma_\phi = (\phi_{84} - \phi_{16})/4+(\phi_{95}-\phi_5)/6$ =	1.2	Poorly Sorted

σ_ϕ <= 0.5: Sample is well sorted.
σ_ϕ >= 1.0: Sample is poorly sorted.

Skewness:

$\alpha_\phi = (\phi_{16} + \phi_{84}-(2*\phi_{50}))/(2(\phi_{84} - \phi_{16})+(\phi_5 + \phi_{95}-(2*\phi_{50}))/(2(\phi_{95} - \phi_5)$ =		
	-0.8	Coarse-Skewed

α_ϕ < -0.1: Sample is Coarse-Skewed
α_ϕ -0.1 to +0.1: Sample is Near-Symmetrical
α_ϕ > +0.1: Sample is Fine-Skewed

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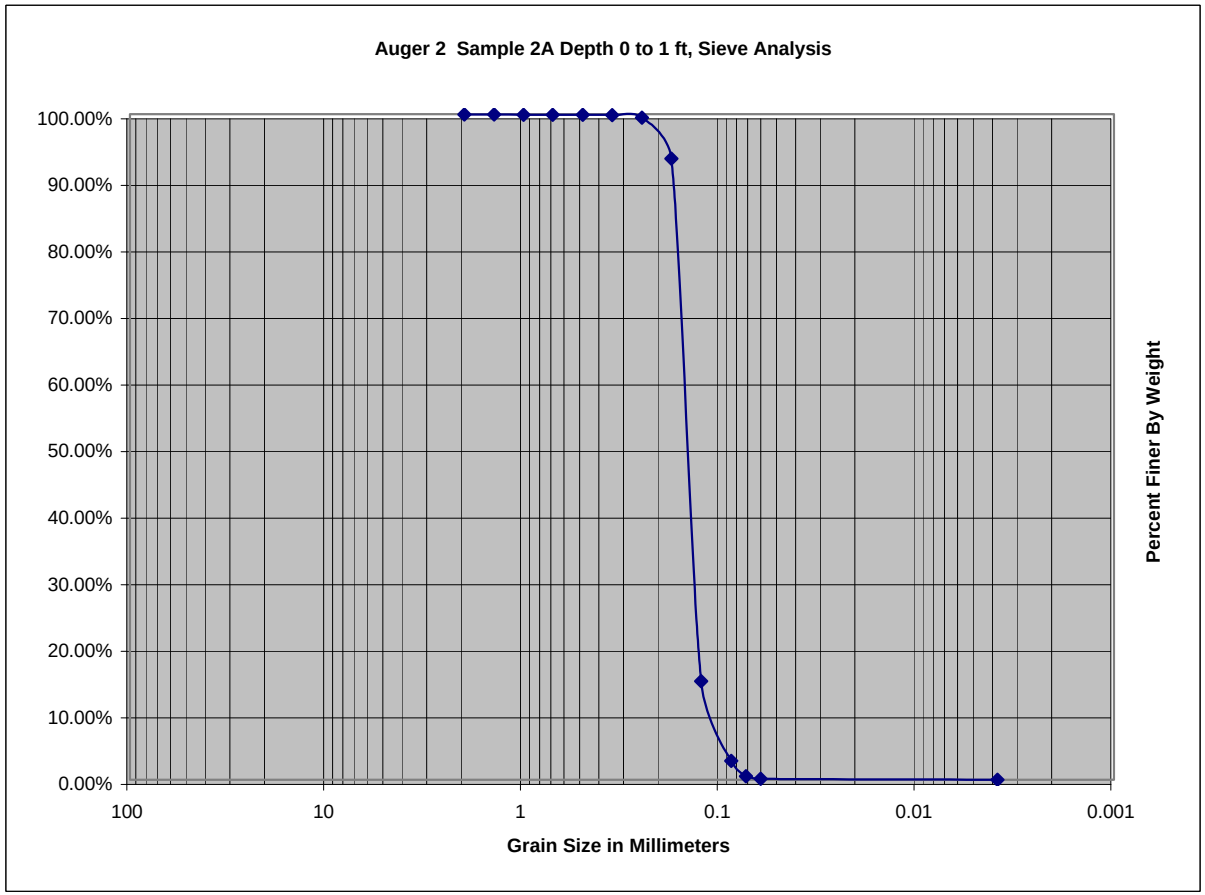
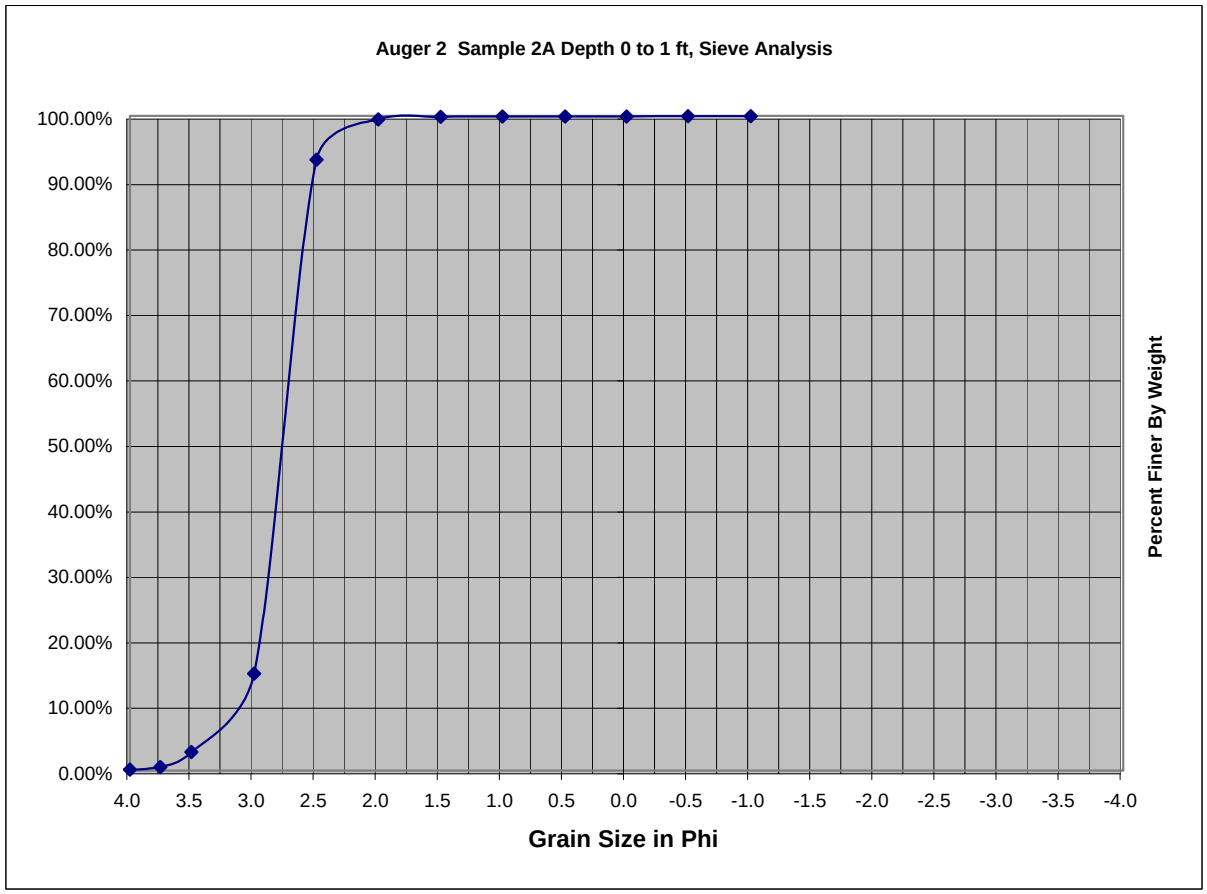



Auger 2 Sample 2A Depth 0 to 1 ft, Sieve Analysis
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
Grain Size in Phi
Percent Finer By Weight

Work Order No. 1306-06-001
Dredged Material Placement Area (DMPA)
Pelican Island Geotechnical investigation
GLO Contract No. 06-090C
Requisition No. 317-6-0482

Samples taken from the beach and dune system at Galveston County Beach Pocket No. 1 - 7-1/2 Mile Road.
Sample Analysis Performed by: **HVJ, Associates**
Grain Size Analysis Performed by: **GBA, Associates**

Sample No: **PPS2A**

Sieve Size, (No.)	Sieve Size, (mm)	Cumulative Weight Retained on Sieve, (grams)	Weight Retained on Sieve, (grams)	Phi, f	% Coarser by Weight	% Finer than by Weight
8	2.36	0	0	-1.2	0.00%	100.00%
16	1.18	0.02	0.02	-0.2	0.02%	99.98%
30	0.59	0.05	0.03	0.8	0.04%	99.96%
50	0.297	0.09	0.04	1.8	0.07%	99.93%
100	0.149	8.25	8.16	2.7	6.31%	93.69%
200	0.074	129.47	121.22	3.76	99.10%	0.90%
Pan	0.062	130.65	1.18	4.0	100.00%	0.00%

Total Weight of Sediment = 130.65 grams

Median Sand Size:

D_{50} = 0.105	D_{16} = 0.14	D_{84} = 0.084
ϕ_{50} = 3.3	ϕ_{16} = 2.8	ϕ_{84} = 3.6

Mean:

$M_{d\phi} = (\phi_{84+}\phi_{16})/2$ = 3.2

Sorting:

		σ_ϕ <= 0.5 Sample is well sorted.
$\sigma_\phi = (\phi_{84} - \phi_{16})/2$ = 0.4	Well Sorted	σ_ϕ >= 1.0 Sample is poorly sorted.

Skewness:

$\alpha_\phi = (M_{d\phi} - \phi_{50})/\sigma_\phi$ = -0.1

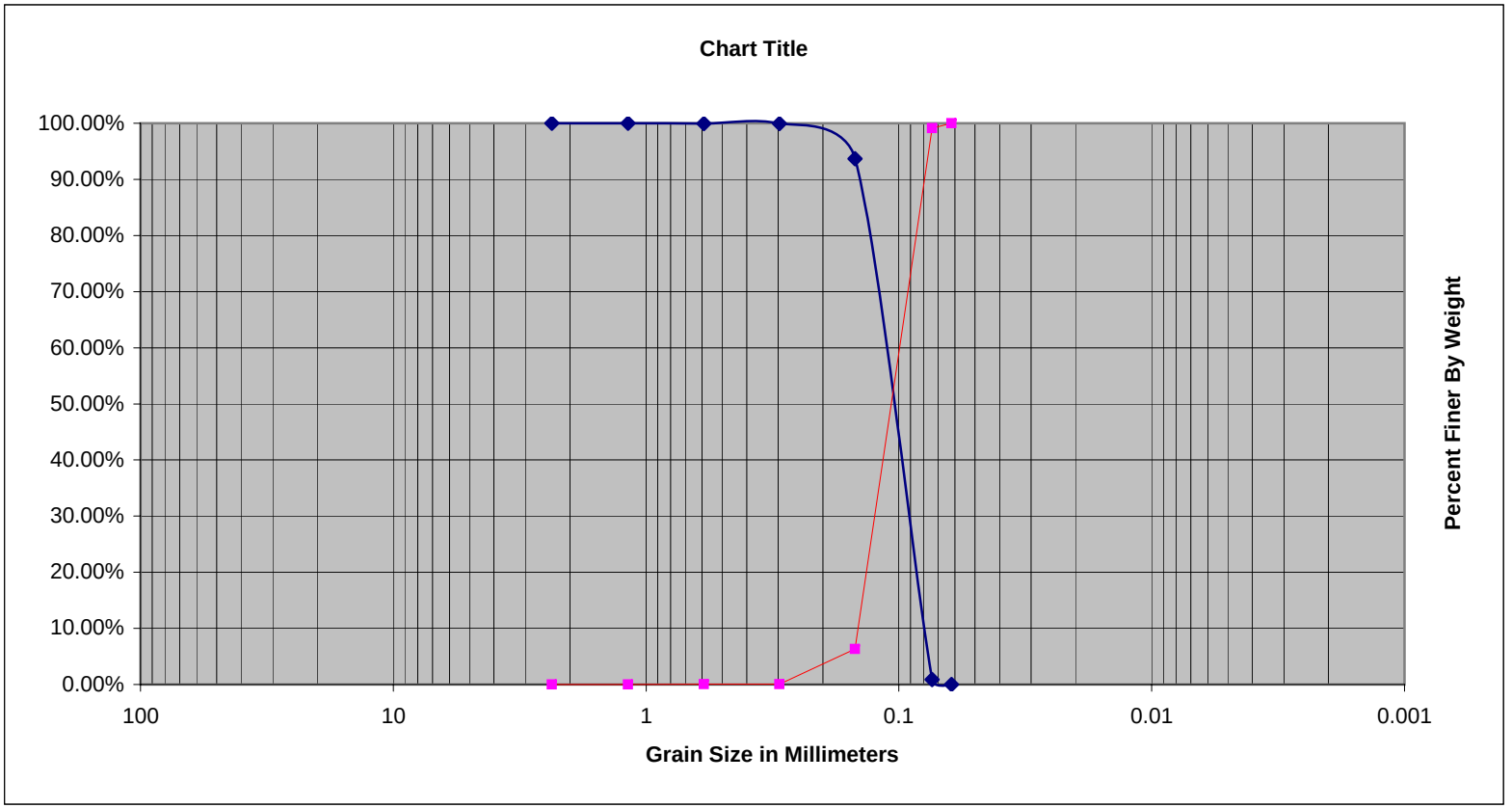
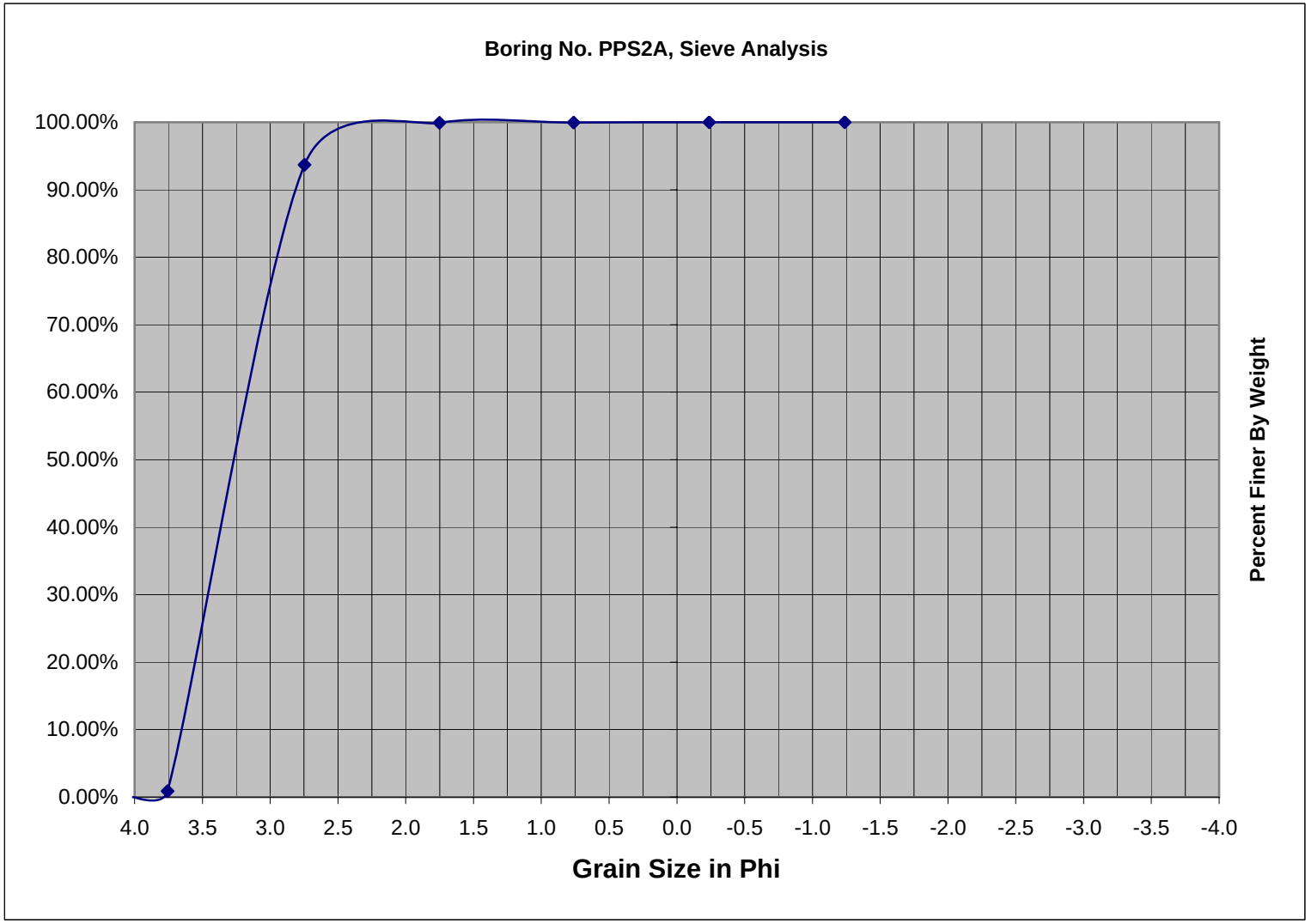


Chart Title
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
100
10
1
0.1
0.01
0.001
Grain Size in Millimeters
Percent Finer By Weight


Boring No. PPS2A, Sieve Analysis
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
Grain Size in Phi
Percent Finer By Weight