

<b>DRILLING LOG</b>		<b>DIVISION:</b> South Atlantic	<b>INSTALLATION:</b> Jacksonville District	<b>SHEET</b> 1 of 1
<b>1. PROJECT</b> DELRAY BEACH		<b>10. SIZE AND TYPE OF BIT</b> 3"		
<b>2. LOCATION</b> (Coordinates or Station) X= 966,715 Y= 776,416		<b>11. DATUM FOR ELEVATION SHOWN</b> (TBM or MSL) NGVD		
<b>3. DRILLING AGENCY:</b> ALPINE SEISMIC		<b>12. MANUFACTURER'S DESIGNATION OF DRILL</b> ALPINE PNEUMATIC		
<b>4. HOLE NO.</b> (As shown on drawing title and file number) DB-99-4		<b>13. TOT NO. OF OVERBURDEN SAMPLES TAKEN</b> disturbed: 0.0 undisturbed: 0.0		
<b>5. NAME OF DRILLER</b> ROB SUSKO		<b>14. TOTAL NO. OF CORE BOXES</b> 1		
<b>6. DIRECTION OF HOLE</b> VERTICAL		<b>15. ELEVATION GROUND WATER</b>		
<b>7. THICKNESS OF BURDEN</b> 0.0 FT		<b>16. DATE HOLE</b> Started Completed 4/20/99 4/20/99		
<b>8. DEPTH DRILLED INTO ROCK</b> 0.0 FT		<b>17. ELEVATION TOP OF HOLE</b> -32.8 ft.		
<b>9. TOTAL DEPTH OF HOLE</b> 18.9' FT		<b>18. TOTAL CORE RECOVERY FOR BORING</b> 99%		
<b>19. SIGNATURE OF GEOLOGIST</b> IBRAHIM DREMALI				

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-32.8	0		SAND, fine-grained, Gray (5Y-6/1) (SP)		1	Sample #1, Depth = 0.2' 0.23 mm, 0.92 phi sorting
-33.9	1		fine-grained, trace shell hash, Gray (5Y-6/1) (SP) from -33.2' to -33.9'		2	0.98% silt Sample #2, Depth = 0.8' 0.24 mm, 1.18 phi sorting
-34.8	2		fine-grained, some shell hash, Light Gray (5Y-7/1) (SP) from -33.9' to -34.8'		3	1.0% silt Sample #3, Depth = 1.6' 0.48 mm, 1.56 phi sorting
-35.5	3		fine-grained, little shell hash, Gray (5Y-6/1) (SP) from -34.8' to -35.5'		4	0.82% silt Sample #4, Depth = 2.4' 0.23 mm, 0.68 phi sorting
-37.3	4		fine-grained, little shell hash, Gray (5Y-6/1) (SP) from -35.5' to -37.3'		5	1.07% silt Sample #5, Depth = 3.5' 0.35 mm, 1.16 phi sorting
	5					
	6				6	Sample #6, Depth = 8.0' 0.23 mm, 0.78 phi sorting
	7					
	8					
	9					
	10		fine-grained, trace shell hash, Gray (5Y-6/1) (SP) from -37.3' to -48.5'			
	11					
	12					
	13				7	Sample #7, Depth = 13.0' 0.26 mm, 0.77 phi sorting
	14					
-48.5	15					
-49.3	16		fine-grained, trace shell hash, Gray (5Y-6/1) (SP) from -48.5' to -49.3'			Sample #8, Depth = 16.0' 0.28 mm, 0.85 phi sorting
	17					
	18		fine-grained, trace shell hash, Gray (5Y-5/1) (SP) from -49.3' to -51.7'		8	1.06% silt
-51.7	19		End of Boring			
	20					
	21					
	22					
	23					
	24					

Note: Soils are classified in accordance with the Unified Soils Classification System.

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW ON: 8/99

SAMPLE NO.: DB99-4 S#1  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 0.2  
SAMPLE TYPE: CORE SAMPLE

USCS DESCRIPTION: SP

DRY SAMPLE WEIGHT (GRAMS): 129.15  
SAMPLE WEIGHT AFTER WASH (GRAMS): 127.91

SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	0.00	0.00	100.00
5	-2.00	4.000	0.55	0.43	99.57
7	-1.50	2.800	0.75	0.58	99.42
10	-1.00	2.000	1.40	1.08	98.92
14	-0.50	1.400	2.60	2.01	97.99
18	0.00	1.000	4.38	3.39	96.61
25	0.50	0.710	7.43	5.75	94.25
35	1.00	0.500	14.77	11.44	88.56
45	1.50	0.355	24.42	18.91	81.09
60	2.00	0.250	44.17	34.20	65.80
80	2.50	0.180	77.90	60.32	39.68
120	3.00	0.125	117.30	90.82	9.18
170	3.50	0.090	127.81	98.96	1.04
200	3.75	0.075	127.88	99.02	0.98
230	4.00	0.063	128.50	99.50	0.50
PAN			129.14	99.99	0.01

PHI (5): 0.34                      PHI (16): 1.31                      PHI (25): 1.70  
PHI (50): 2.30                      PHI (75): 2.74                      PHI (84): 2.89  
PHI (95): 3.26

SIEVE LOSS(g): 0.01                      SILT/CLAY: 0.98%  
SKEWNESS: -0.637                      KURTOSIS: 1.147

GRAPHIC METHOD

MEAN (PHI): 2.02                      SORTING: 0.79  
MEAN (mm) : 0.25                      MEDIAN (mm): 0.20  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD

MOMENT METHOD

MEAN (PHI): 2.10                      SORTING: 0.92  
MEAN (mm) : 0.23

DATA FILE NAME: DB99-4#1.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW            ON: 8/99

SAMPLE NO.: DB99-4 S#2  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 0.8  
SAMPLE TYPE: CORE SAMPLE

USCS DESCRIPTION: SP

DRY SAMPLE WEIGHT (GRAMS): 155.33  
SAMPLE WEIGHT AFTER WASH (GRAMS): 154.29

SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	0.00	0.00	100.00
5	-2.00	4.000	1.48	0.95	99.05
7	-1.50	2.800	3.23	2.08	97.92
10	-1.00	2.000	7.52	4.84	95.16
14	-0.50	1.400	15.42	9.93	90.07
18	0.00	1.000	25.27	16.27	83.73
25	0.50	0.710	43.93	28.28	71.72
35	1.00	0.500	69.56	44.78	55.22
45	1.50	0.355	90.04	57.97	42.03
60	2.00	0.250	114.48	73.70	26.30
80	2.50	0.180	136.62	87.95	12.05
120	3.00	0.125	150.95	97.18	2.82
170	3.50	0.090	154.22	99.29	0.71
200	3.75	0.075	154.26	99.31	0.69
230	4.00	0.063	154.80	99.66	0.34
PAN			155.33	100.00	0.00

PHI(5): -0.98            PHI(16): -0.02            PHI(25): 0.36  
PHI(50): 1.20            PHI(75): 2.05            PHI(84): 2.36  
PHI(95): 2.88

SIEVE LOSS(g): 0.00            SILT/CLAY: 0.69%  
SKEWNESS: -0.209            KURTOSIS: 0.942

GRAPHIC METHOD

MEAN (PHI): 1.09            SORTING: 1.19  
MEAN (mm) : 0.47            MEDIAN (mm): 0.44  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD

MOMENT METHOD

MEAN (PHI): 1.12            SORTING: 1.18  
MEAN (mm) : 0.46

DATA FILE NAME: DB99-4#2.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW ON: 8/99

SAMPLE NO.: DB99-4 S#3  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 1.6  
SAMPLE TYPE: CORE SAMPLE

USCS DESCRIPTION: SP

DRY SAMPLE WEIGHT (GRAMS): 137.06  
SAMPLE WEIGHT AFTER WASH (GRAMS): 135.99

SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	3.91	2.85	97.15
5	-2.00	4.000	6.39	4.66	95.34
7	-1.50	2.800	9.03	6.59	93.41
10	-1.00	2.000	14.14	10.32	89.68
14	-0.50	1.400	21.86	15.95	84.05
18	0.00	1.000	30.36	22.15	77.85
25	0.50	0.710	41.18	30.05	69.95
35	1.00	0.500	56.73	41.39	58.61
45	1.50	0.355	70.69	51.58	48.42
60	2.00	0.250	89.58	65.36	34.64
80	2.50	0.180	112.77	82.28	17.72
120	3.00	0.125	131.91	96.24	3.76
170	3.50	0.090	135.86	99.12	0.88
200	3.75	0.075	135.93	99.18	0.82
230	4.00	0.063	136.51	99.60	0.40
PAN			137.06	100.00	0.00

PHI(5): -1.91                      PHI(16): -0.50                      PHI(25): 0.18  
PHI(50): 1.42                      PHI(75): 2.28                      PHI(84): 2.56  
PHI(95): 2.96

SIEVE LOSS(g): 0.00                      SILT/CLAY: 0.82%  
SKEWNESS: -0.589                      KURTOSIS: 0.948

GRAPHIC METHOD

MEAN (PHI): 0.91                      SORTING: 1.53  
MEAN (mm) : 0.53                      MEDIAN (mm): 0.37  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD

MOMENT METHOD

MEAN (PHI): 1.07                      SORTING: 1.56  
MEAN (mm) : 0.48

DATA FILE NAME: DB99-4#3.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW            ON: 8/99

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SAMPLE NO.: DB99-4 S#4  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 2.4  
SAMPLE TYPE: CORE SAMPLE  
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USCS DESCRIPTION: SP  
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DRY SAMPLE WEIGHT (GRAMS): 192.20  
SAMPLE WEIGHT AFTER WASH (GRAMS): 190.28  
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SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	0.00	0.00	100.00
5	-2.00	4.000	0.02	0.01	99.99
7	-1.50	2.800	0.07	0.04	99.96
10	-1.00	2.000	0.36	0.19	99.81
14	-0.50	1.400	1.05	0.55	99.45
18	0.00	1.000	2.22	1.16	98.84
25	0.50	0.710	4.91	2.55	97.45
35	1.00	0.500	11.54	6.00	94.00
45	1.50	0.355	24.00	12.49	87.51
60	2.00	0.250	64.47	33.54	66.46
80	2.50	0.180	131.07	68.19	31.81
120	3.00	0.125	182.43	94.92	5.08
170	3.50	0.090	190.08	98.90	1.10
200	3.75	0.075	190.15	98.93	1.07
230	4.00	0.063	191.20	99.48	0.52
PAN			192.18	99.99	0.01

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PHI (5): 0.85            PHI (16): 1.58            PHI (25): 1.80  
PHI (50): 2.24            PHI (75): 2.63            PHI (84): 2.80  
PHI (95): 3.01  
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SIEVE LOSS(g): 0.02            SILT/CLAY: 1.07%  
SKEWNESS: -0.503            KURTOSIS: 1.064  
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GRAPHIC METHOD

MEAN (PHI): 2.10            SORTING: 0.61  
MEAN (mm) : 0.23            MEDIAN (mm): 0.21  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD  
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MOMENT METHOD

MEAN (PHI): 2.15            SORTING: 0.68  
MEAN (mm) : 0.23  
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DATA FILE NAME: DB99-4#4.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW            ON: 8/99

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SAMPLE NO.: DB99-4 S#5  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 3.5  
SAMPLE TYPE: CORE SAMPLE  
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USCS DESCRIPTION: SP  
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DRY SAMPLE WEIGHT (GRAMS): 240.78  
SAMPLE WEIGHT AFTER WASH (GRAMS): 238.56  
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SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	0.00	0.00	100.00
5	-2.00	4.000	2.55	1.06	98.94
7	-1.50	2.800	5.55	2.31	97.69
10	-1.00	2.000	10.32	4.29	95.71
14	-0.50	1.400	18.52	7.69	92.31
18	0.00	1.000	26.69	11.08	88.92
25	0.50	0.710	39.09	16.23	83.77
35	1.00	0.500	61.50	25.54	74.46
45	1.50	0.355	91.56	38.03	61.97
60	2.00	0.250	143.86	59.75	40.25
80	2.50	0.180	197.00	81.82	18.18
120	3.00	0.125	232.18	96.43	3.57
170	3.50	0.090	238.42	99.02	0.98
200	3.75	0.075	238.49	99.05	0.95
230	4.00	0.063	239.62	99.52	0.48
PAN			240.76	99.99	0.01

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PHI(5): -0.90            PHI(16): 0.48            PHI(25): 0.97  
PHI(50): 1.78            PHI(75): 2.35            PHI(84): 2.57  
PHI(95): 2.95  
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SIEVE LOSS(g): 0.02            SILT/CLAY: 0.95%  
SKEWNESS: -0.713            KURTOSIS: 1.147  
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GRAPHIC METHOD

MEAN (PHI): 1.38            SORTING: 1.05  
MEAN (mm) : 0.39            MEDIAN (mm): 0.29  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD  
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MOMENT METHOD

MEAN (PHI): 1.52            SORTING: 1.16  
MEAN (mm) : 0.35  
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DATA FILE NAME: DB99-4#5.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW ON: 8/99

SAMPLE NO.: DB99-4 S#6  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 8.0  
SAMPLE TYPE: CORE SAMPLE

USCS DESCRIPTION: SP

DRY SAMPLE WEIGHT (GRAMS): 237.42  
SAMPLE WEIGHT AFTER WASH (GRAMS): 233.83

SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	0.00	0.00	100.00
5	-2.00	4.000	0.98	0.41	99.59
7	-1.50	2.800	1.01	0.43	99.57
10	-1.00	2.000	1.02	0.43	99.57
14	-0.50	1.400	1.04	0.44	99.56
18	0.00	1.000	3.73	1.57	98.43
25	0.50	0.710	7.20	3.03	96.97
35	1.00	0.500	17.97	7.57	92.43
45	1.50	0.355	38.43	16.19	83.81
60	2.00	0.250	91.14	38.39	61.61
80	2.50	0.180	163.32	68.79	31.21
120	3.00	0.125	215.70	90.85	9.15
170	3.50	0.090	232.81	98.06	1.94
200	3.75	0.075	233.39	98.30	1.70
230	4.00	0.063	235.58	99.23	0.77
PAN			237.38	99.98	0.02

PHI(5): 0.72                      PHI(16): 1.49                      PHI(25): 1.70  
PHI(50): 2.19                      PHI(75): 2.64                      PHI(84): 2.84  
PHI(95): 3.29

SIEVE LOSS(g): 0.04                      SILT/CLAY: 1.70%  
SKEWNESS: -0.278                      KURTOSIS: 1.118

GRAPHIC METHOD

MEAN (PHI): 2.11                      SORTING: 0.68  
MEAN (mm) : 0.23                      MEDIAN (mm): 0.22  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD

MOMENT METHOD

MEAN (PHI): 2.11                      SORTING: 0.78  
MEAN (mm) : 0.23

DATA FILE NAME: DB99-4#6.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW            ON: 8/99

SAMPLE NO.: DB99-4 S#7  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 13.0  
SAMPLE TYPE: CORE SAMPLE

USCS DESCRIPTION: SP

DRY SAMPLE WEIGHT (GRAMS): 213.86  
SAMPLE WEIGHT AFTER WASH (GRAMS): 211.67

SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	1.15	0.54	99.46
5	-2.00	4.000	1.65	0.77	99.23
7	-1.50	2.800	2.03	0.95	99.05
10	-1.00	2.000	2.47	1.15	98.85
14	-0.50	1.400	3.06	1.43	98.57
18	0.00	1.000	3.91	1.83	98.17
25	0.50	0.710	6.03	2.82	97.18
35	1.00	0.500	12.52	5.85	94.15
45	1.50	0.355	30.86	14.43	85.57
60	2.00	0.250	98.99	46.29	53.71
80	2.50	0.180	178.67	83.55	16.45
120	3.00	0.125	208.55	97.52	2.48
170	3.50	0.090	211.61	98.95	1.05
200	3.75	0.075	211.63	98.96	1.04
230	4.00	0.063	212.74	99.47	0.53
PAN			213.86	100.00	0.00

PHI(5): 0.86            PHI(16): 1.52            PHI(25): 1.67  
PHI(50): 2.05            PHI(75): 2.39            PHI(84): 2.52  
PHI(95): 2.91

SIEVE LOSS(g): 0.00            SILT/CLAY: 1.04%  
SKEWNESS: -0.333            KURTOSIS: 1.168

GRAPHIC METHOD

MEAN (PHI): 1.97            SORTING: 0.50  
MEAN (mm) : 0.25            MEDIAN (mm): 0.24  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD

MOMENT METHOD

MEAN (PHI): 1.96            SORTING: 0.77  
MEAN (mm) : 0.26

DATA FILE NAME: DB99-4#7.TAB

GRADATION ANALYSIS REPORT  
DELRAY BEACH VIBRACORES 1999  
TESTED BY: RW ON: 8/99

SAMPLE NO.: DB99-4 S#8  
SAMPLE ELEV. (FT. NGVD):  
SAMPLE DEPTH (FT.): 16.0  
SAMPLE TYPE: CORE SAMPLE

USCS DESCRIPTION: SP

DRY SAMPLE WEIGHT (GRAMS): 219.42  
SAMPLE WEIGHT AFTER WASH (GRAMS): 217.29

SIEVE SIZE	PHI SIZE	MESH SIZE (mm)	RETAINED (GRAMS)	RETAINED (%)	PASSED (%)
5/8	-4.00	16.000	0.00	0.00	100.00
5/16	-3.00	8.000	0.00	0.00	100.00
5	-2.00	4.000	0.29	0.13	99.87
7	-1.50	2.800	0.68	0.31	99.69
10	-1.00	2.000	2.83	1.29	98.71
14	-0.50	1.400	4.57	2.08	97.92
18	0.00	1.000	7.36	3.35	96.65
25	0.50	0.710	13.93	6.35	93.65
35	1.00	0.500	32.04	14.60	85.40
45	1.50	0.355	58.86	26.83	73.17
60	2.00	0.250	113.39	51.68	48.32
80	2.50	0.180	176.36	80.38	19.62
120	3.00	0.125	212.14	96.68	3.32
170	3.50	0.090	217.03	98.91	1.09
200	3.75	0.075	217.10	98.94	1.06
230	4.00	0.063	218.32	99.50	0.50
PAN			219.38	99.98	0.02

PHI(5): 0.27                      PHI(16): 1.06                      PHI(25): 1.43  
PHI(50): 1.97                      PHI(75): 2.41                      PHI(84): 2.61  
PHI(95): 2.95

SIEVE LOSS(g): 0.04                      SILT/CLAY: 1.06%  
SKEWNESS: -0.456                      KURTOSIS: 1.117

GRAPHIC METHOD

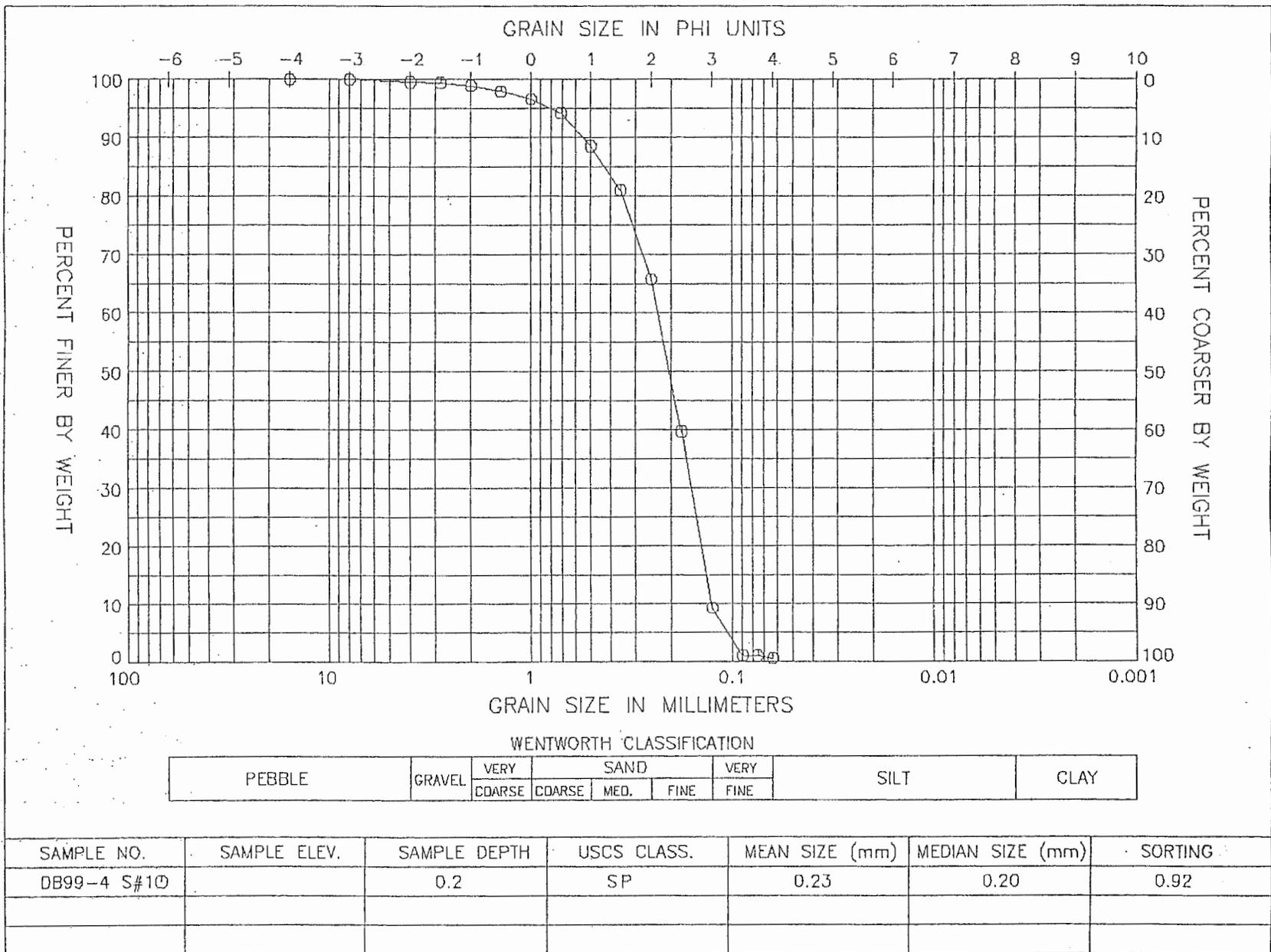
MEAN (PHI): 1.77                      SORTING: 0.78  
MEAN (mm) : 0.29                      MEDIAN (mm): 0.26  
NOTE: MEAN WAS CALCULATED USING 5 POINT METHOD

MOMENT METHOD

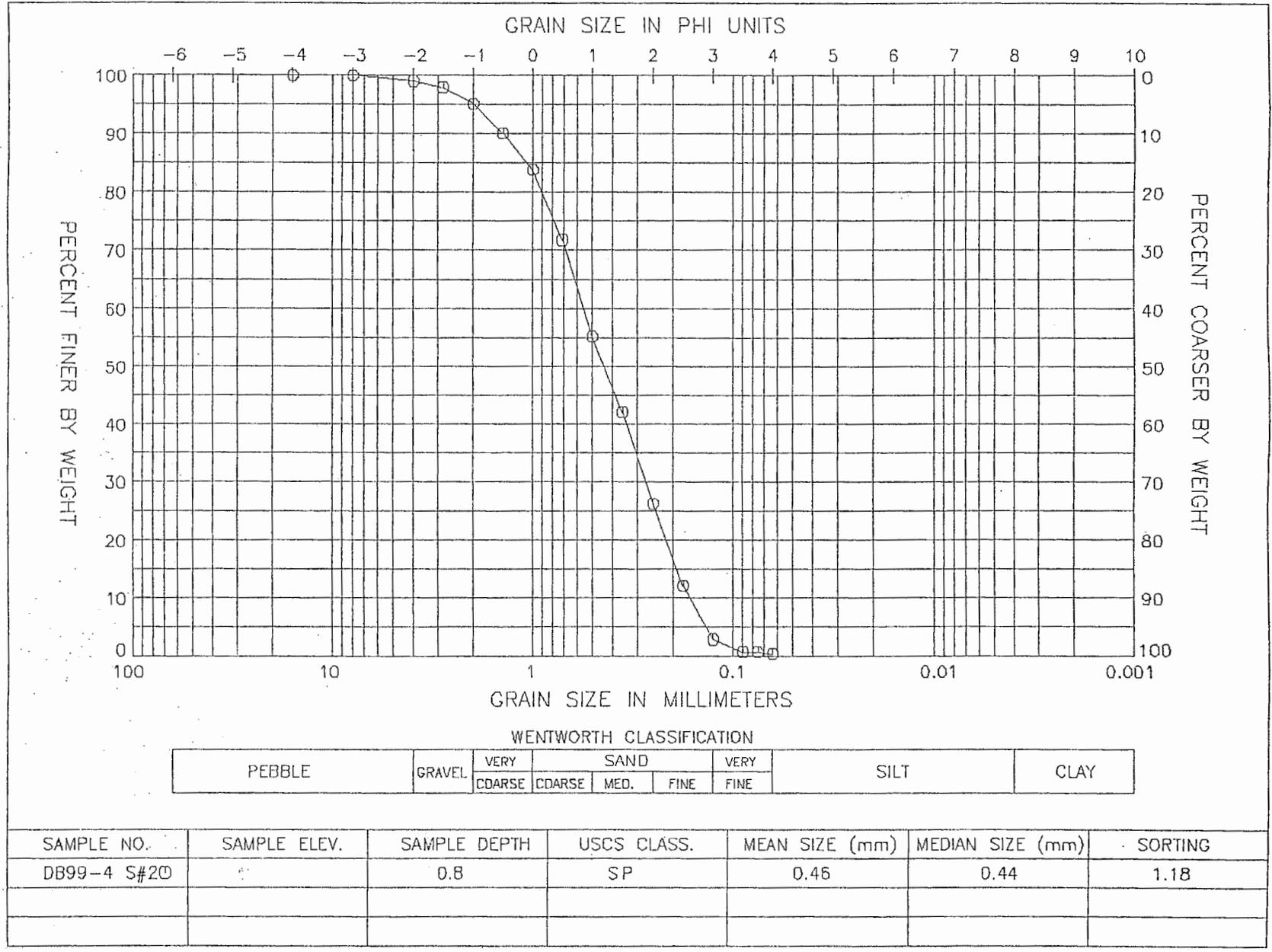
MEAN (PHI): 1.83                      SORTING: 0.85  
MEAN (mm) : 0.28

DATA FILE NAME: DB99-4#8.TAB

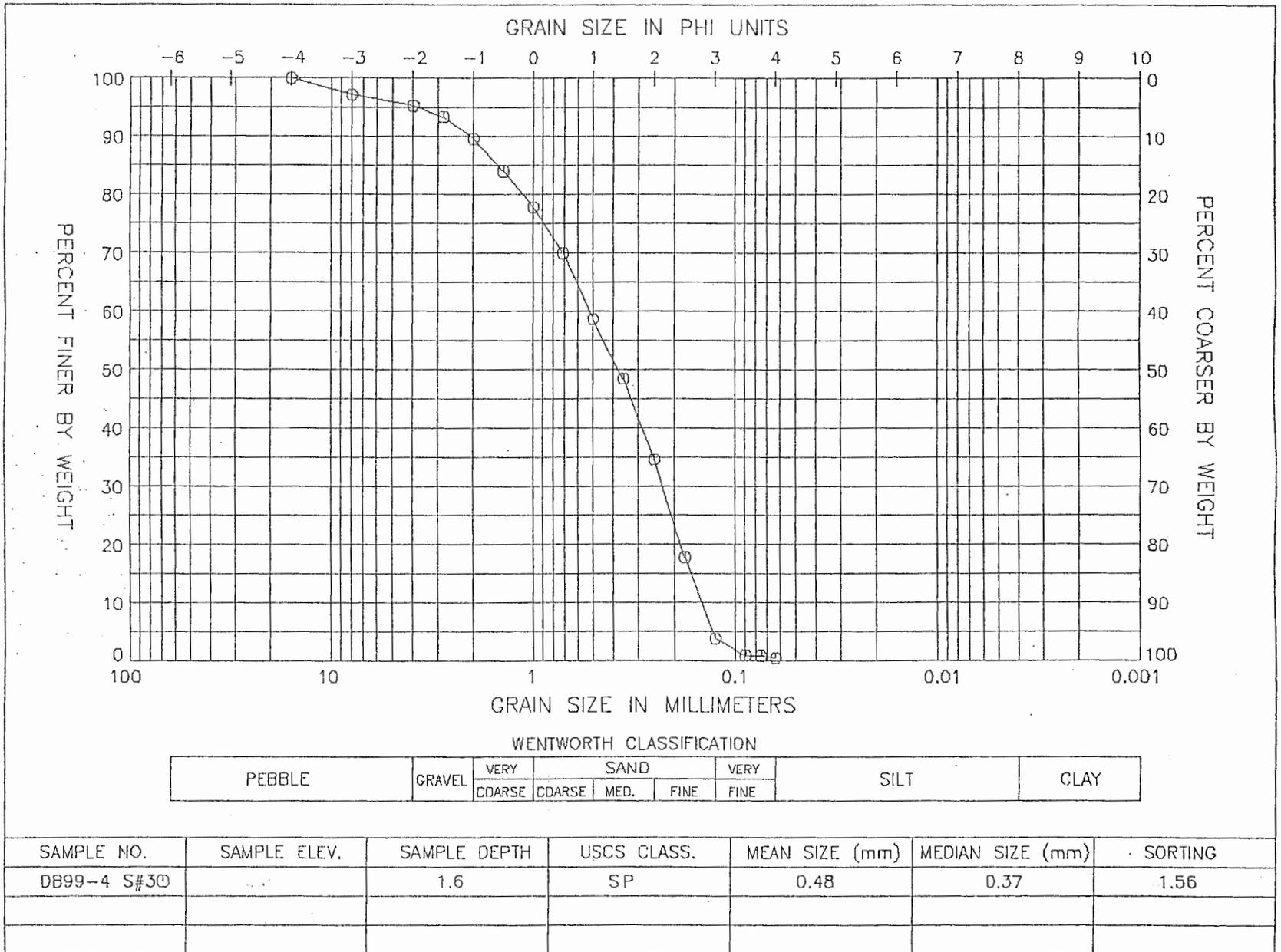
GRAIN SIZE DISTRIBUTION CURVE  
 DELRAY BEACH VIBRACORES 1999



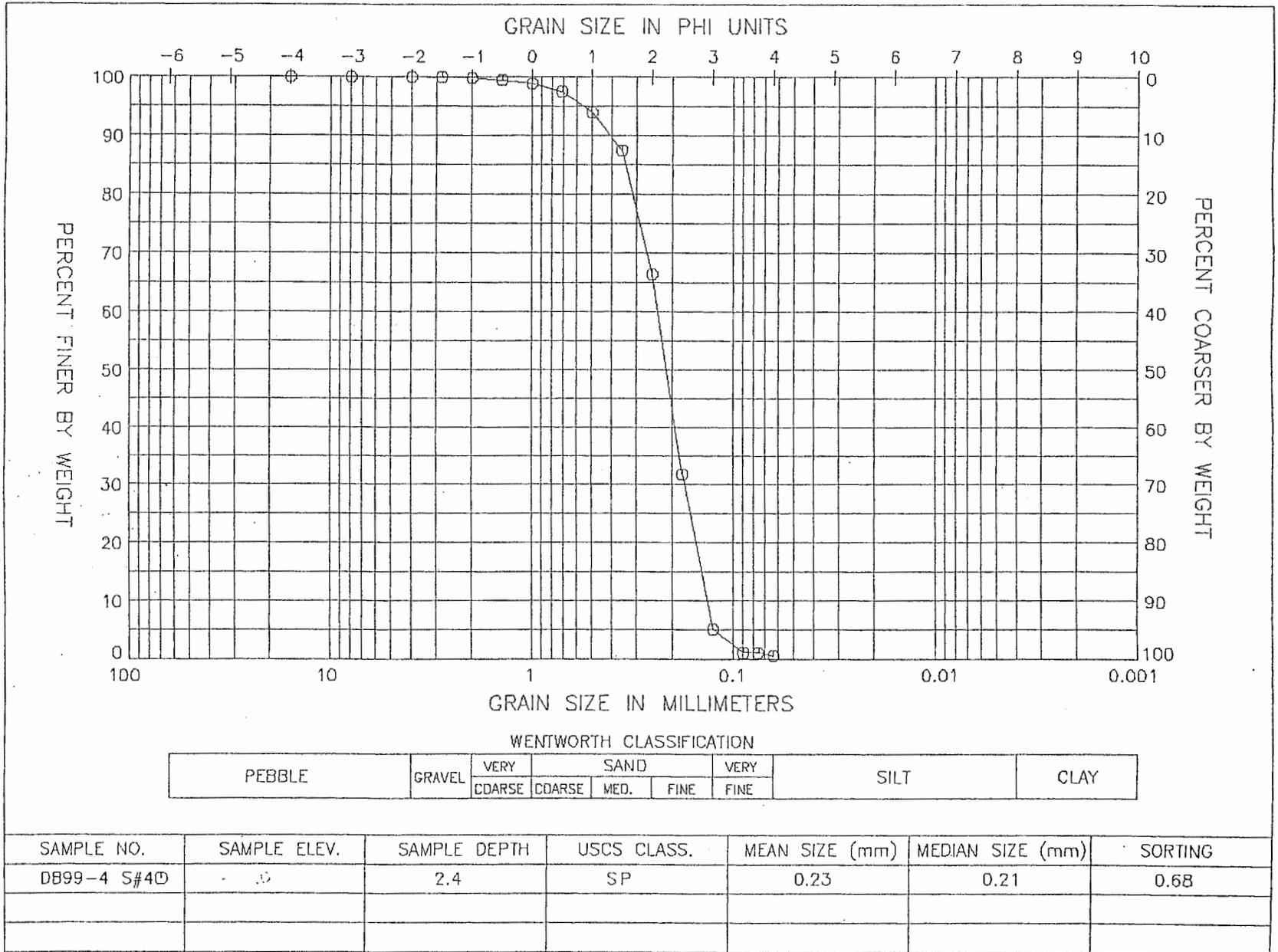
GRAIN SIZE DISTRIBUTION CURVE  
 DELRAY BEACH VIBRACORES 1999



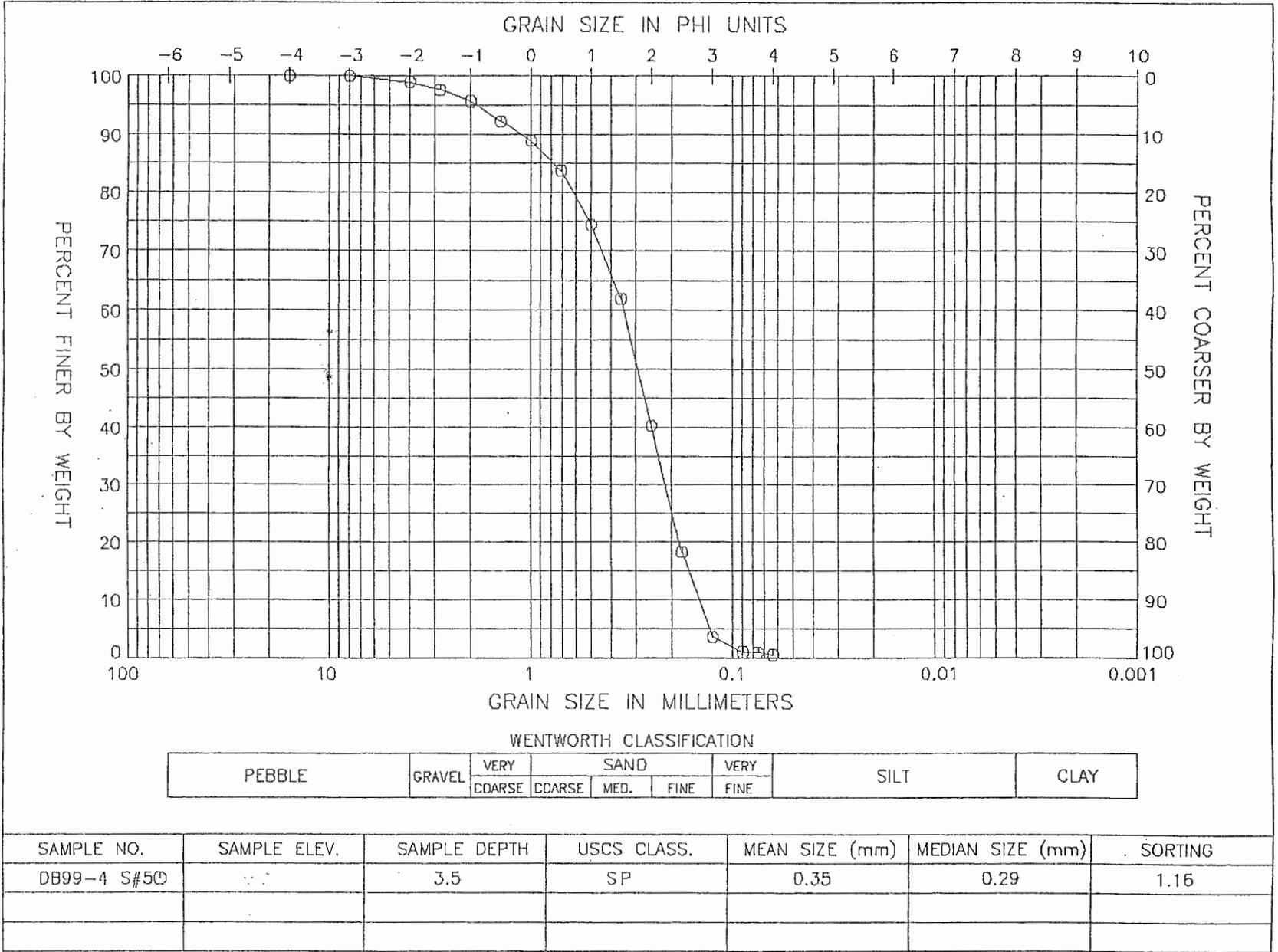
GRAIN SIZE DISTRIBUTION CURVE  
 DELRAY BEACH VIBRACORES 1999



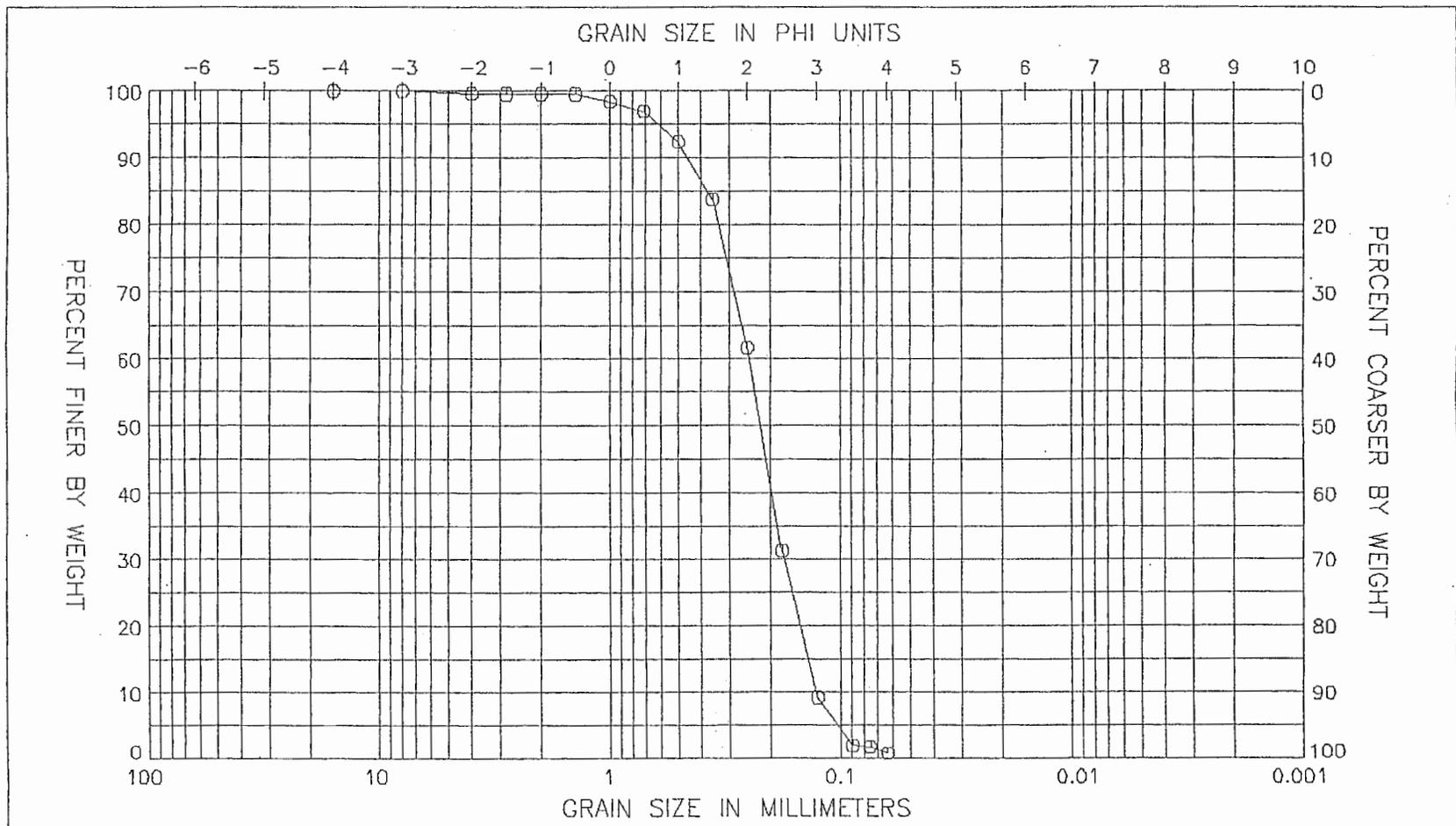
GRAIN SIZE DISTRIBUTION CURVE  
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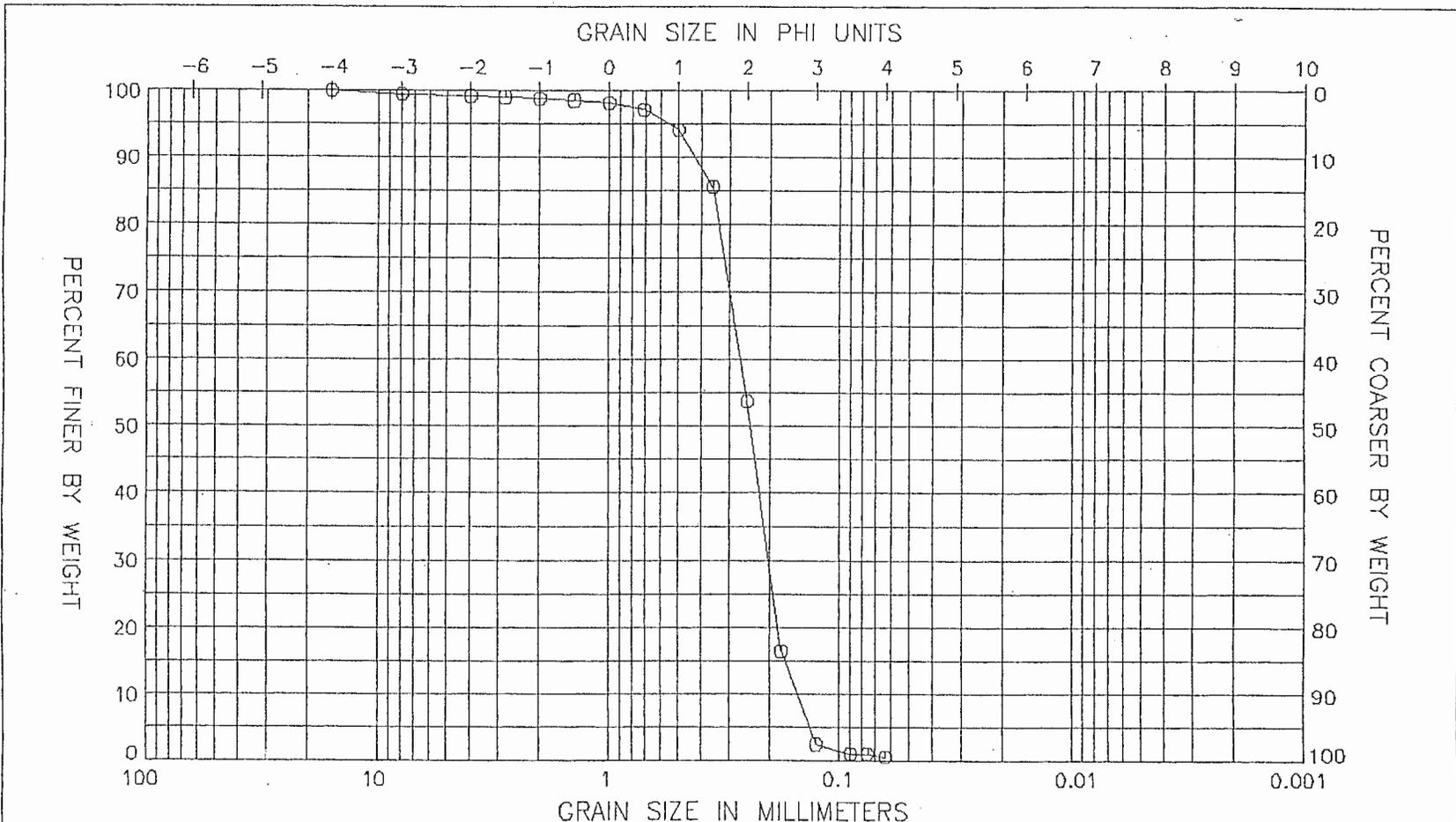


WENTWORTH CLASSIFICATION

PEBBLE	GRAVEL	VERY	SAND			VERY	SILT	CLAY
		COARSE	COARSE	MED.	FINE	FINE		

SAMPLE NO.	SAMPLE ELEV.	SAMPLE DEPTH	USCS CLASS.	MEAN SIZE (mm)	MEDIAN SIZE (mm)	SORTING
DB99-4 S#60		8.0	SP	0.23	0.22	0.78

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WENTWORTH CLASSIFICATION

PEBBLE	GRAVEL	VERY	SAND		VERY	SILT	CLAY
		COARSE	COARSE	MED.	FINE		

SAMPLE NO.	SAMPLE ELEV.	SAMPLE DEPTH	USCS CLASS.	MEAN SIZE (mm)	MEDIAN SIZE (mm)	SORTING
DB99-4 S#70		13.0	SP	0.26	0.24	0.77

GRAIN SIZE DISTRIBUTION CURVE  
 DELRAY BEACH VIBRACORES 1999

