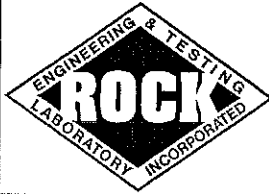


LOG OF BORING AA-35

SHEET 1 of 1



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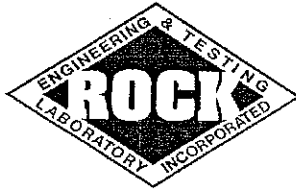
CLIENT: HDR Engineering, Inc.
PROJECT: Galveston Anchorage Area C Sand Source Inv.
LOCATION: Anchorage Area C, Galveston, Texas
NUMBER: G109233

DATE(S) DRILLED: 10/15/09 - 10/15/09

FIELD DATA										LABORATORY DATA					DRILLING METHOD(S):
SOIL SYMBOL	Elevation, Ft. [NAVD]	SAMPLE NUMBER	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	ATTERBERG LIMITS			DRY DENSITY POUNDS/CU.FT	COMPRESSIVE STRENGTH (TONS/SQ FT)	MINUS NO. 200 SIEVE (%)	GROUNDWATER INFORMATION:			
						LL	PL	PI							
												SURFACE ELEVATION: -26.22' NAVD			
												DESCRIPTION OF STRATUM			
	5														
	10														
	15														
	20														
	25														
	28	SS S-1	X	N= 0							5	POORLY GRADED SAND , with clay and shell fragments, dark gray and brown, very loose.			
	29	SS S-2	X	N= 3							6	Same as above, dark gray and gray.			
	30	SS S-3	X	N= 4							7	Same as above, dark bluish gray, loose.			
	31	SS S-4	X	N= 8							7	POORLY GRADED SAND , with clay and shell fragments, gray and light gray, loose.			
	32	SS S-5	X	N= 48							8	Same as above, dense.			
	36.2											Boring was extended to an elevation of -36.2-feet NAVD during the drilling operations.			
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring depth and location was determined by HDR Engineering, Inc. Boring operations were performed by RETL at GPS Coord. N. 29.35109 W. 94.76691.			

9233 ANCHORAGE BASIN C.GPJ ROCK ETL GDT 11/30/09

LOG OF BORING



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Galveston Anchorage Area C Sand Source Investigation

CLIENT: HDR Engineering, Inc.

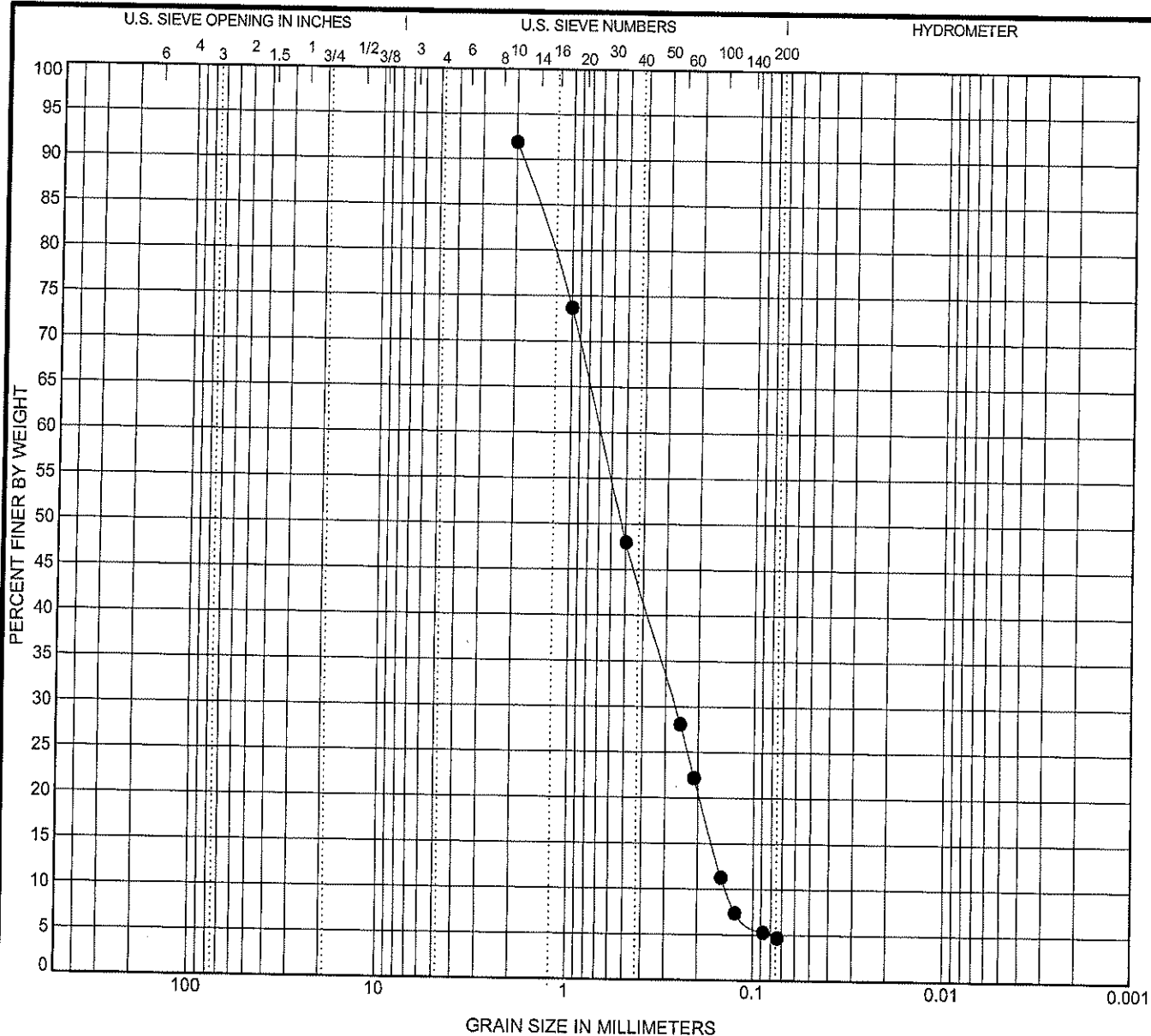
BORING ID.: AA-35

DESCRIPTION: Anchorage Area C Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)				
-26.22' to -28.22' NAVD	-28.22' to -30.22' NAVD	-30.22' to -32.22' NAVD	-32.22' to -34.22' NAVD	-34.22' to -36.22' NAVD
8.10	4.10	25.00	0.90	0.70

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL				
	-26.22' to -28.22' NAVD	-28.22' to -30.22' NAVD	-30.22' to -32.22' NAVD	-32.22' to -34.22' NAVD	-34.22' to -36.22' NAVD
#10	100.00	100.00	100.00	100.00	100.00
#18	73.70	85.80	55.30	97.70	97.00
#35	48.00	71.80	33.80	95.10	92.80
#60	28.10	59.20	23.10	92.30	88.30
#70	22.20	55.20	19.60	88.90	85.70
#100	11.30	38.10	12.20	41.30	44.80
#120	7.40	18.90	9.50	18.20	21.90
#170	5.30	8.10	7.20	8.30	10.80
#200	4.70	6.40	6.50	6.80	7.70
STATISTICS (EXCLUDING SHELL)					
MEDIAN GRAIN SIZE (mm)	0.55	0.17	0.85	0.17	0.16
MEAN GRAIN SIZE (mm)	0.53	0.15	0.53	0.17	0.15
SORTING (σ)	1.36	N/A	N/A	N/A	N/A

*The -#10 material was utilized as the total sample for Grain Size Distribution Curve calculations.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-35 (-26.22' to -28.22' NAVD)		AA-35 (-26.22' to -28.22' NAVD)				0.73	4.92

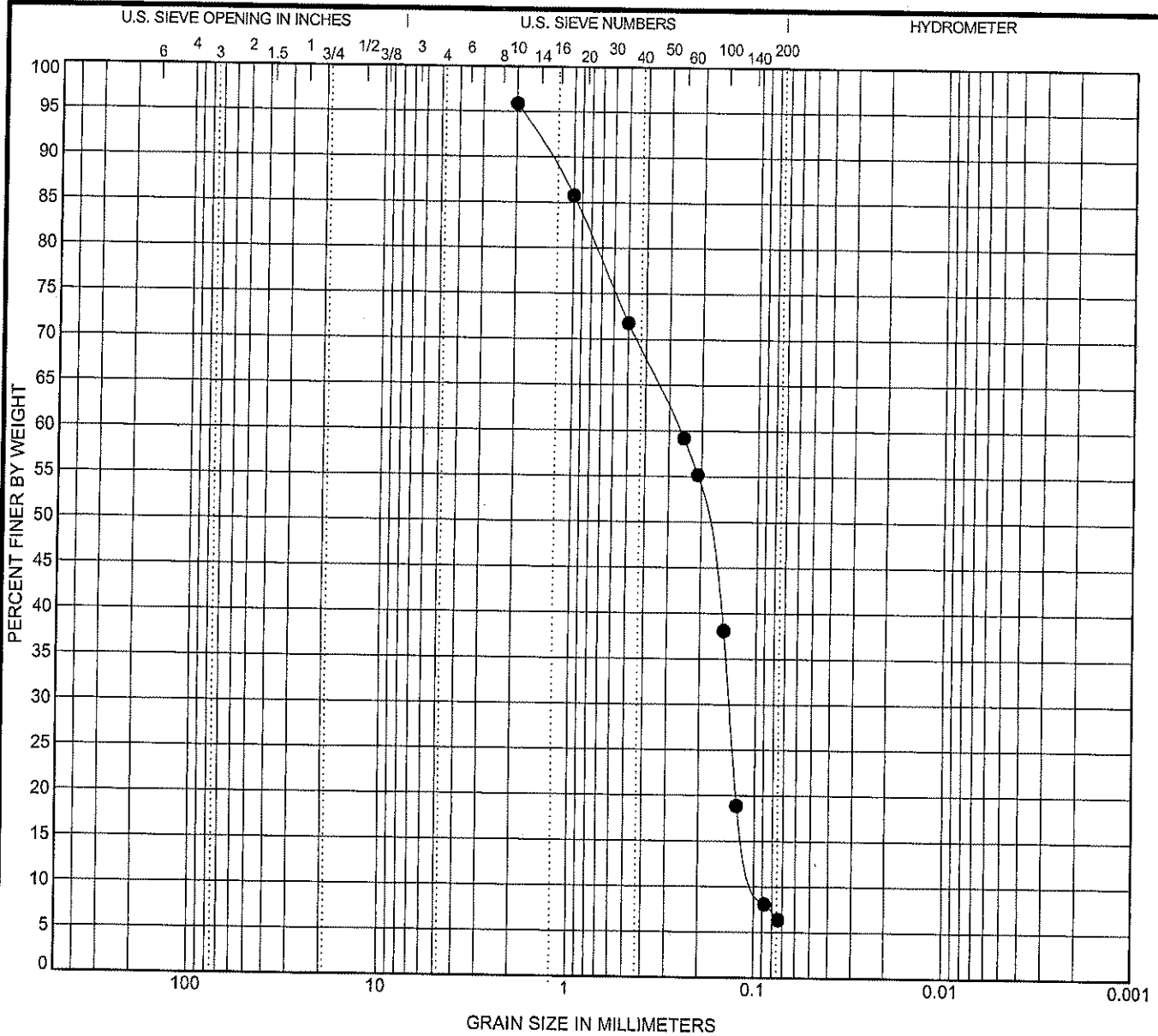
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-35 (-26.22' to -28.22' NAVD)		2	0.691	0.267	0.141	0.0			



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GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.
 Location: Anchorage Area C, Galveston, Texas
 Number: G109233



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-35 (-28.22' to -30.22' NAVD)		AA-35 (-28.22' to -30.22' NAVD)				0.78	2.79

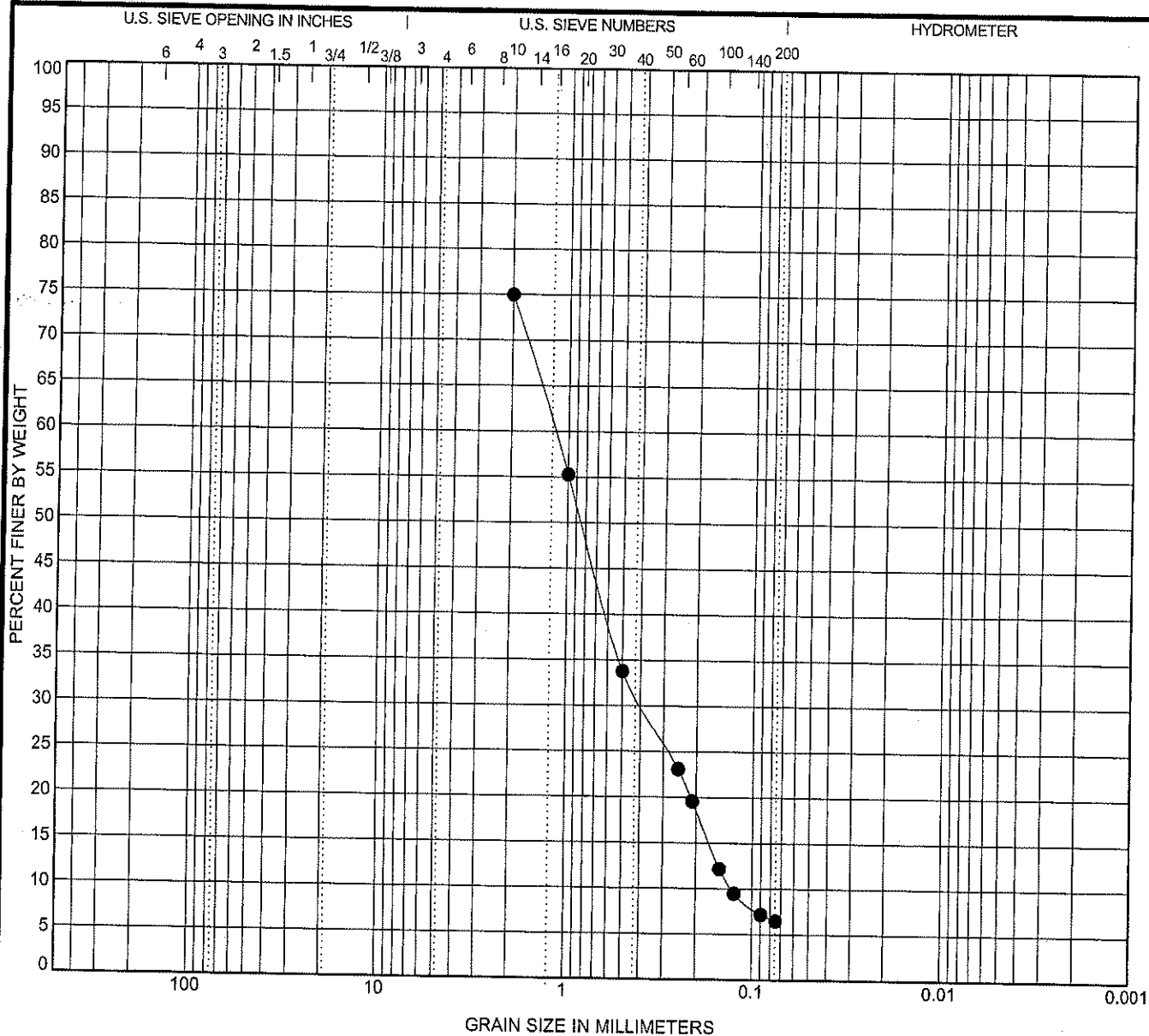
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-35 (-28.22' to -30.22' NAVD)	2	2	0.261	0.138	0.094	0.0			



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GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification					LL	PL	PI	Cc	Cu
● AA-35 (-30.22' to -32.22' NAVD)		AA-35 (-30.22' to -32.22' NAVD)								1.00	9.13
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● AA-35 (-30.22' to -32.22' NAVD)		2	1.18	0.391	0.129	0.0	68.5	6.5			

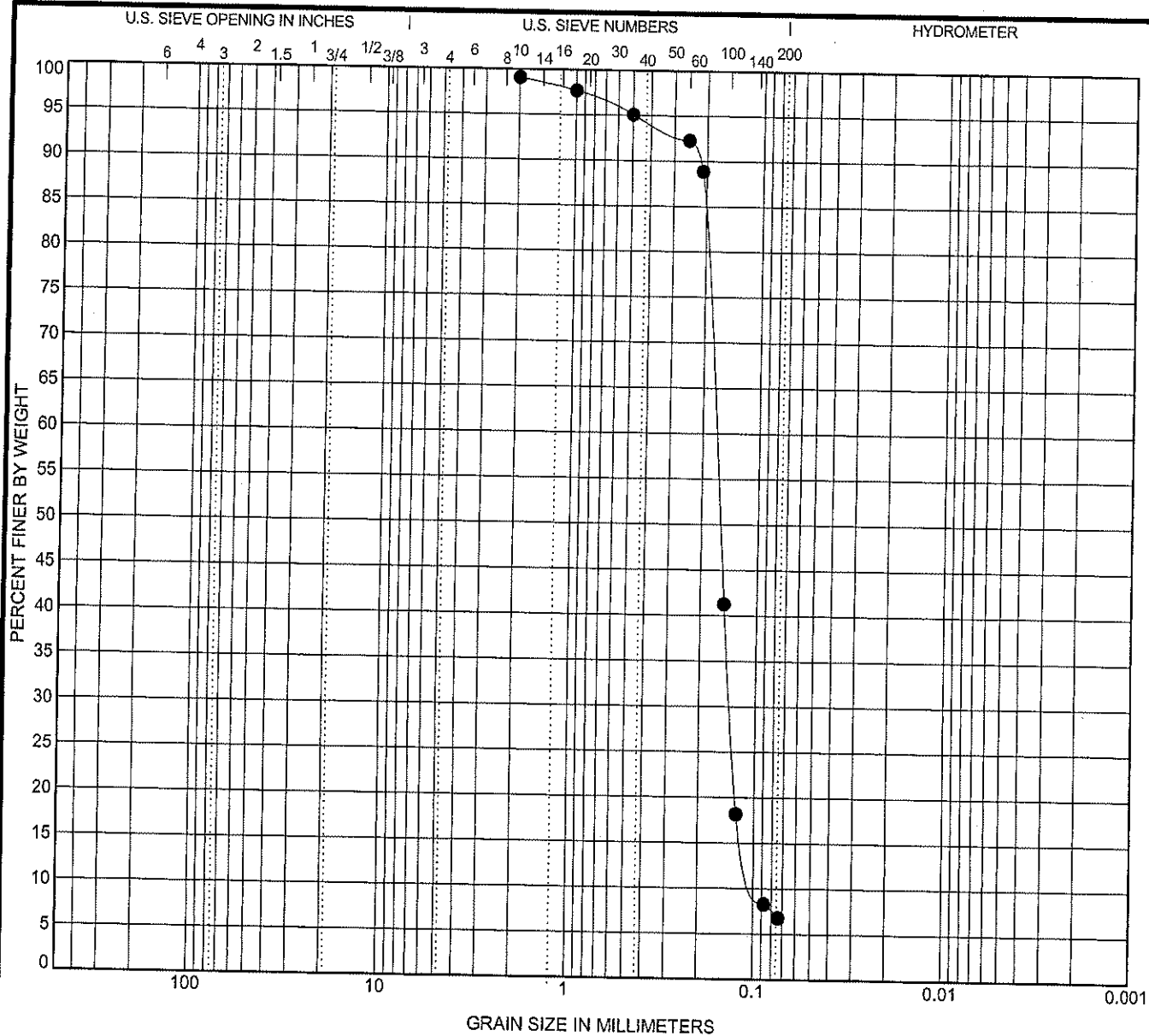
U.S. GRAIN SIZE C-9233 ANCHORAGE BASIN C.G.P.J. US LAB.GDT. 12/1/09



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GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.
Location: Anchorage Area C, Galveston, Texas
Number: G109233



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-35 (-32.22' to -34.22' NAVD)		AA-35 (-32.22' to -34.22' NAVD)				1.17	1.82

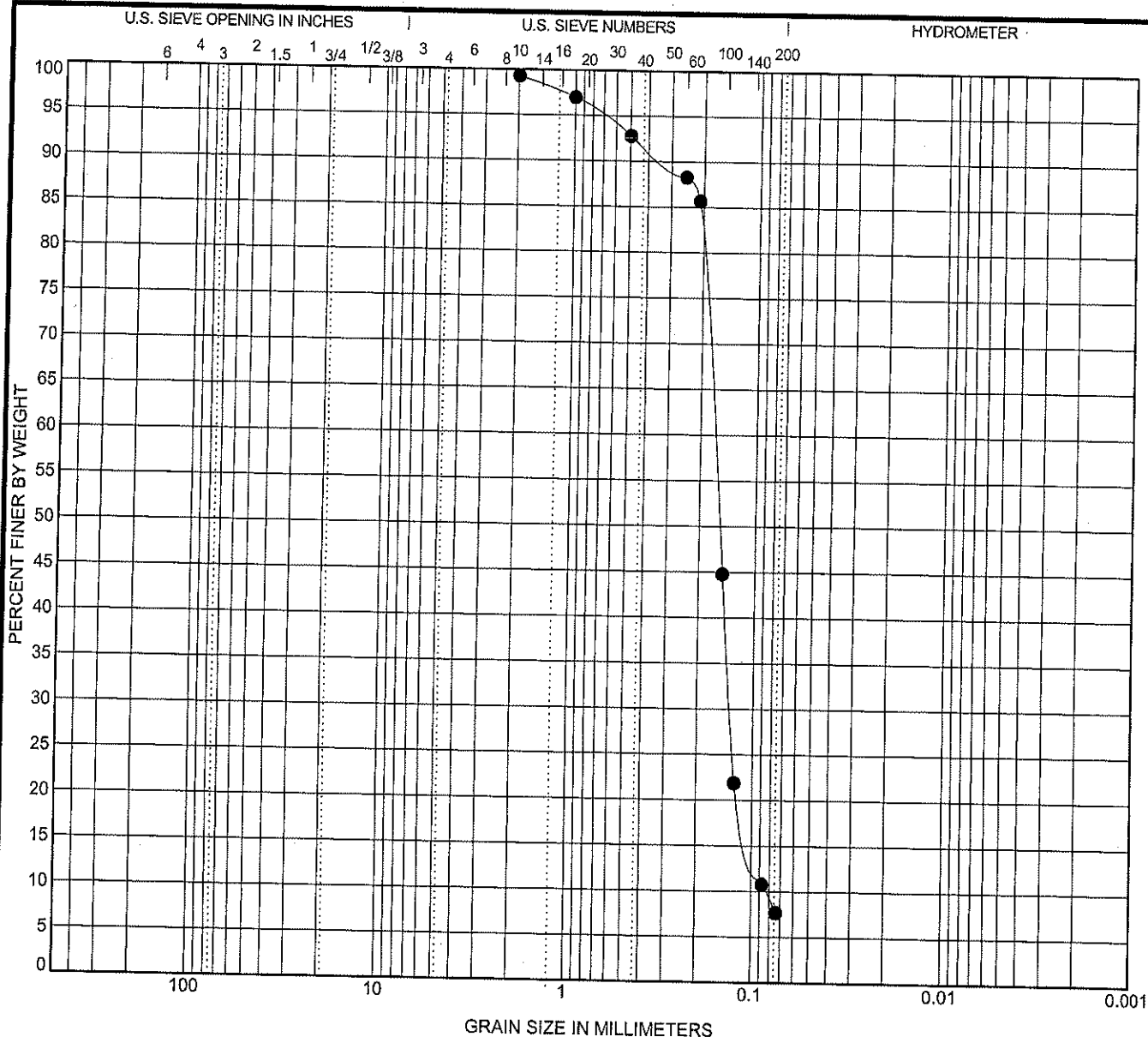
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-35 (-32.22' to -34.22' NAVD)		2	0.171	0.137	0.093	0.0			



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GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area C Sand Source Inv.
 Location: Anchorage Area C, Galveston, Texas
 Number: G109233



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-35 (-34.22' to -36.22' NAVD)		AA-35 (-34.22' to -36.22' NAVD)				1.24	2.01

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-35 (-34.22' to -36.22' NAVD)		2	0.169	0.133	0.084	0.0			



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GRAIN SIZE DISTRIBUTION

Project: Galveston Anchorage Area 'C' Sand Source Inv.
 Location: Anchorage Area C, Galveston, Texas
 Number: G109233



Figure 27: AA-35; Sample 1



Figure 28: AA-35; Sample 2

December 8, 2009
Attn.: Ms. Lauren Augustin
RETL Job No.: G109233

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

ROCK ENGINEERING AND TESTING LABORATORY, INC.
6817 LEOPARD STREET
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Figure 29: AA-35; Sample 3



Figure 30: AA-35; Sample 4

December 8, 2009
Attn.: Ms. Lauren Augustin
RETL Job No.: G109233

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

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Figure 31: AA-35; Sample 5



Figure 32: AA-36; Sample 2

December 8, 2009
Attn.: Ms. Lauren Augustin
RETL Job No.: G109233

PROP. GALVESTON ANCHORAGE AREA C SAND SOURCE INVESTIGATION
Anchorage Area C, Galveston, Texas

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