



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Anchorage Basin Sand Source Investigation

CLIENT: HDR Engineering, Inc.

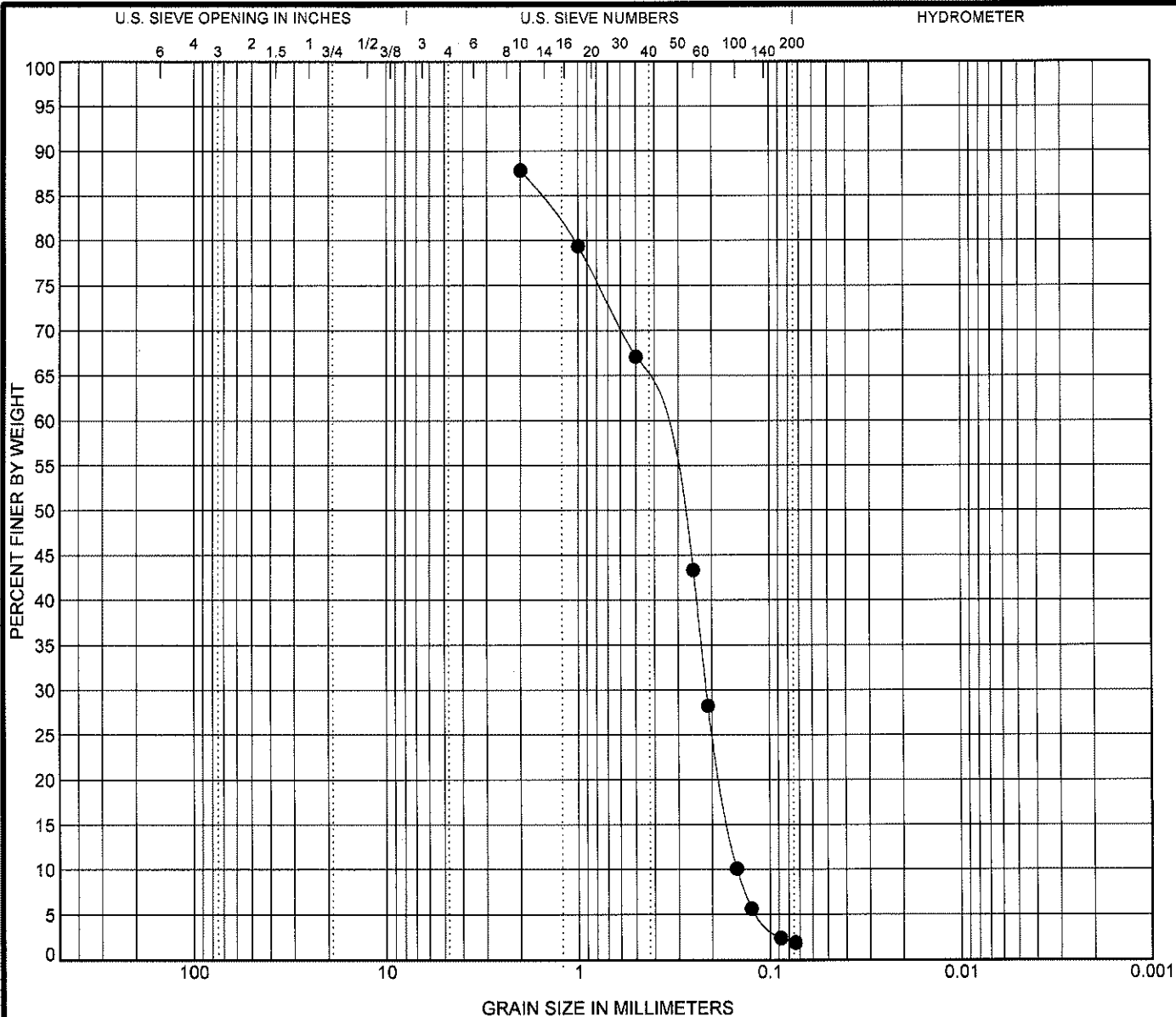
BORING ID.: AA-13

DESCRIPTION: Anchorage Basin Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)				
-32' to -33' NAVD	-34' to -35' NAVD	-35' to -36' NAVD	-37' to -38' NAVD	-40' to -41' NAVD
12.15	4.65	0.01	0.38	0.15

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL				
	-32' to -33' NAVD	-34' to -35' NAVD	-35' to -36' NAVD	-37' to -38' NAVD	-40' to -41' NAVD
#10	100.00	100.00	100.00	100.00	100.00
#18	79.37	90.31	99.92	99.42	99.59
#35	67.10	83.72	99.79	99.29	99.38
#60	43.35	67.44	99.34	98.90	98.78
#70	28.25	50.65	98.49	98.03	97.23
#100	10.10	23.45	55.94	42.46	39.74
#120	5.66	15.35	31.73	21.53	19.20
#170	2.42	11.45	22.01	10.85	8.00
#200	1.92	10.70	18.83	8.53	5.21
STATISTICS (EXCLUDING SHELL)					
MEDIAN GRAIN SIZE (mm)	0.28	0.21	0.16	0.17	0.17
MEAN GRAIN SIZE (mm)	0.44	0.25	N/A	0.16	0.16
SORTING (σ)	1.24	N/A	N/A	N/A	0.38

*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-13 (-32' to -33' NAVD)		Borrow Area (-32' to -33' NAVD)				0.76	2.74

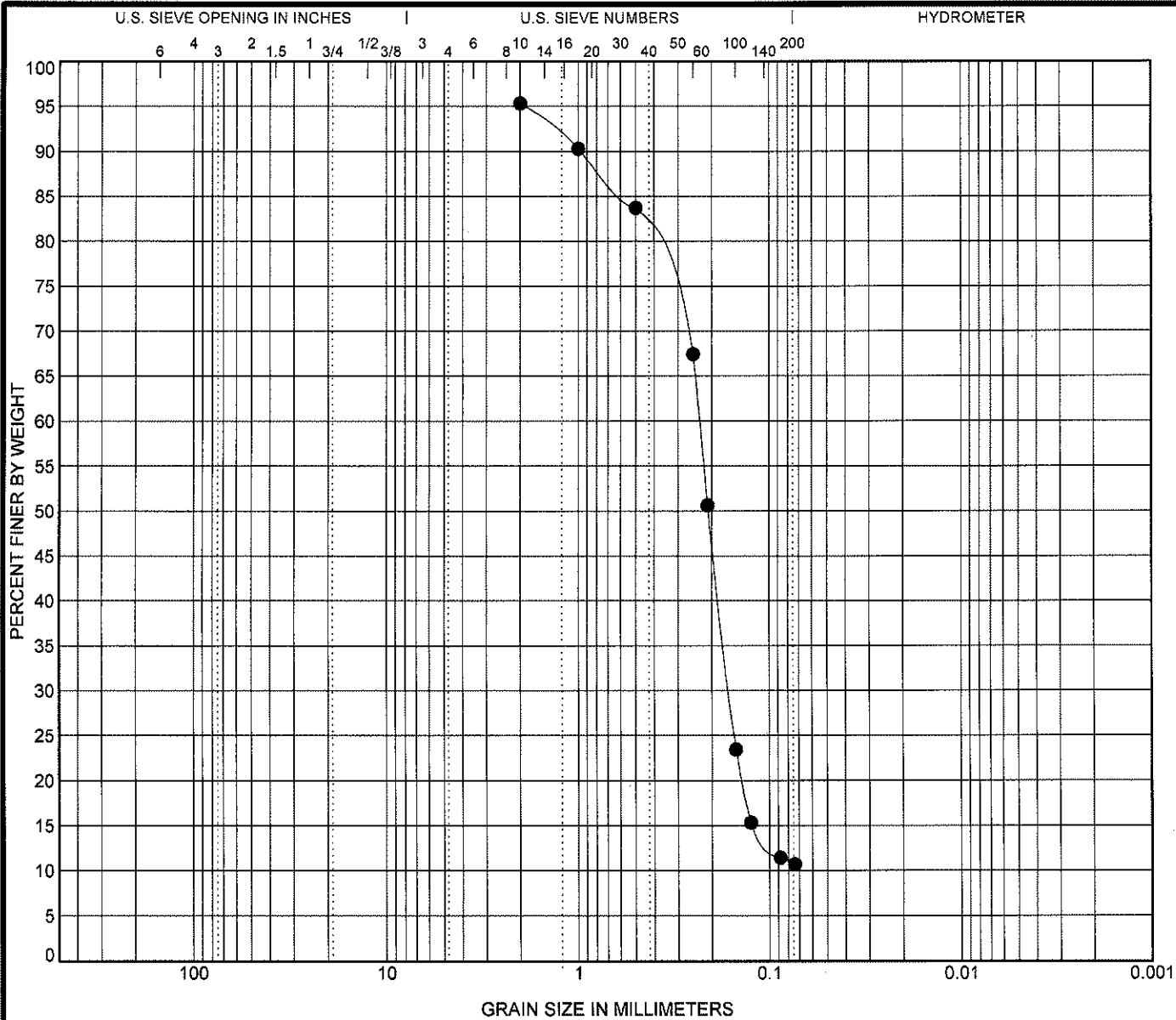
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-13 (-32' to -33' NAVD)		2	0.406	0.214	0.148	0.0			



Rock Engineering & Testing Lab., Inc.
 6817 Leopard St.
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 Telephone: (361) 883-4555
 Fax: (361) 883-4711

GRAIN SIZE DISTRIBUTION

Project: Anchorage Basin Sand Source Investigation
 Location: Anchorage Basin; Galveston, Texas
 Number: G109112



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen ID	Depth	Classification	LL	PL	PI	Cc	Cu
● AA-13 (-34' to -35' NAVD)		Borrow Area (-34' to -35' NAVD)				1.80	3.68

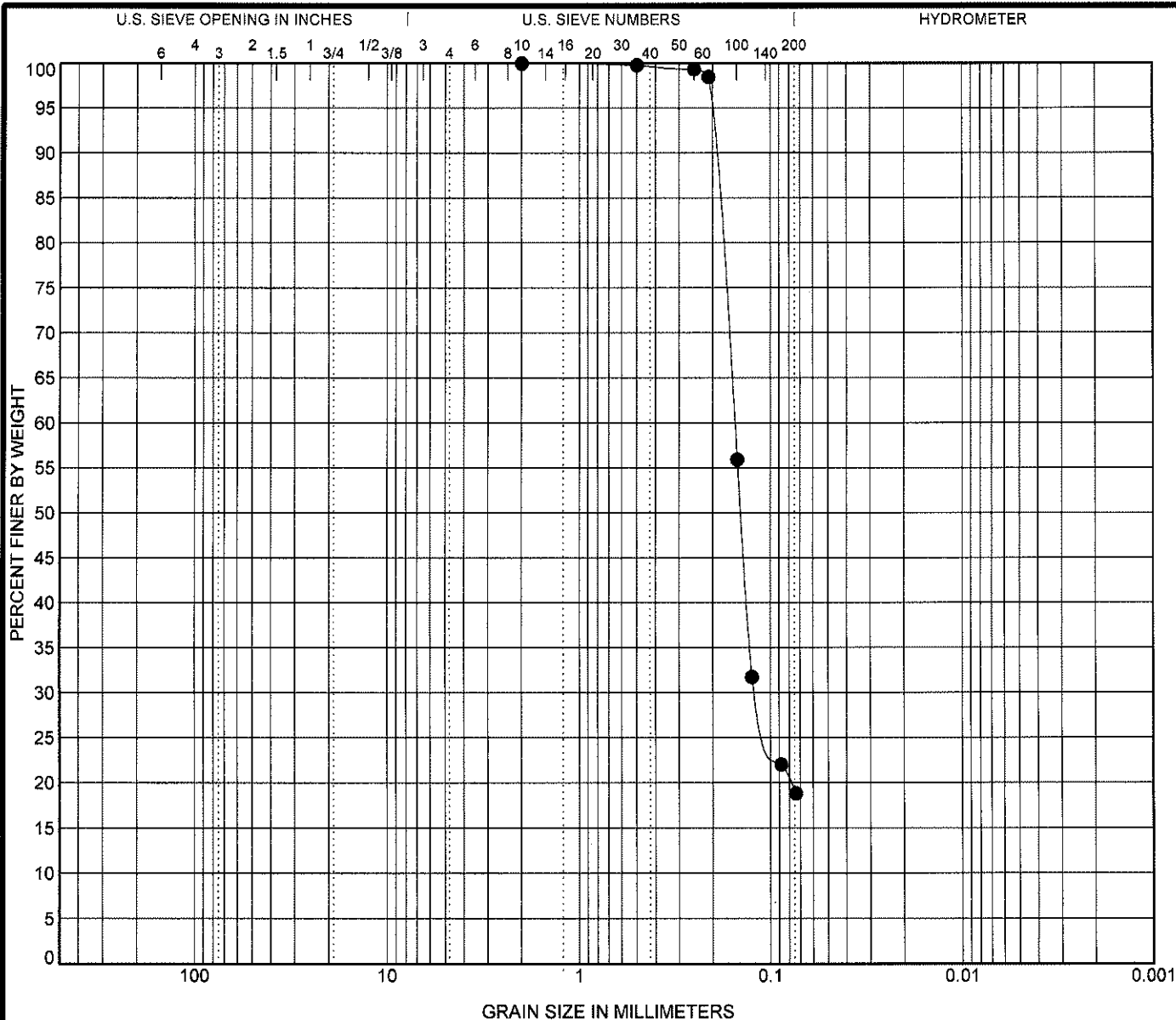
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-13 (-34' to -35' NAVD)		2	0.231	0.162		0.0			



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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

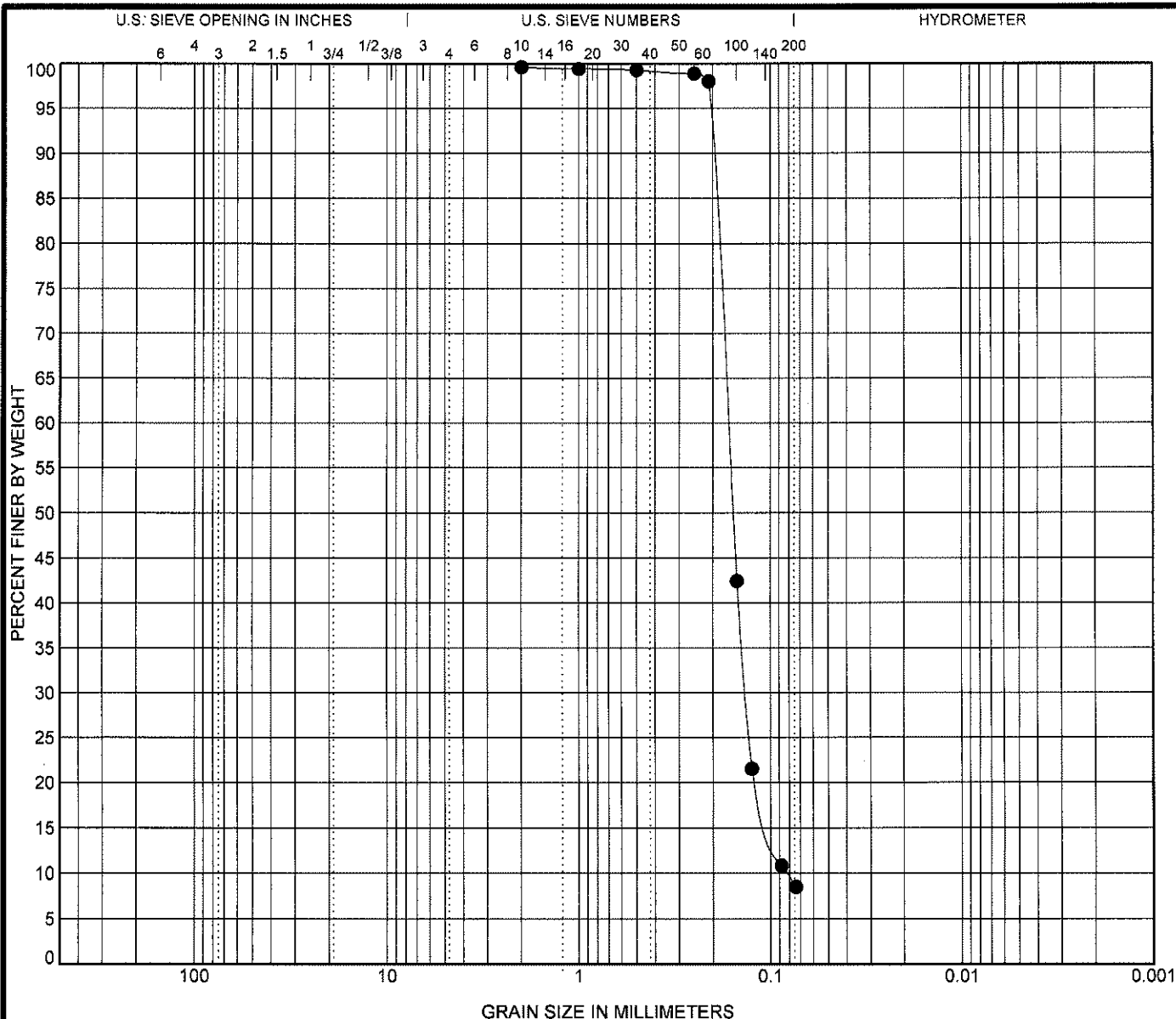
Specimen ID	Depth	Classification				LL	PL	PI	Cc	Cu
● AA-13	(-35' to -36' NAVD)	Borrow Area (-35' to -36' NAVD)								
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
● AA-13	(-35' to -36' NAVD)	2	0.154	0.117		0.0				



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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

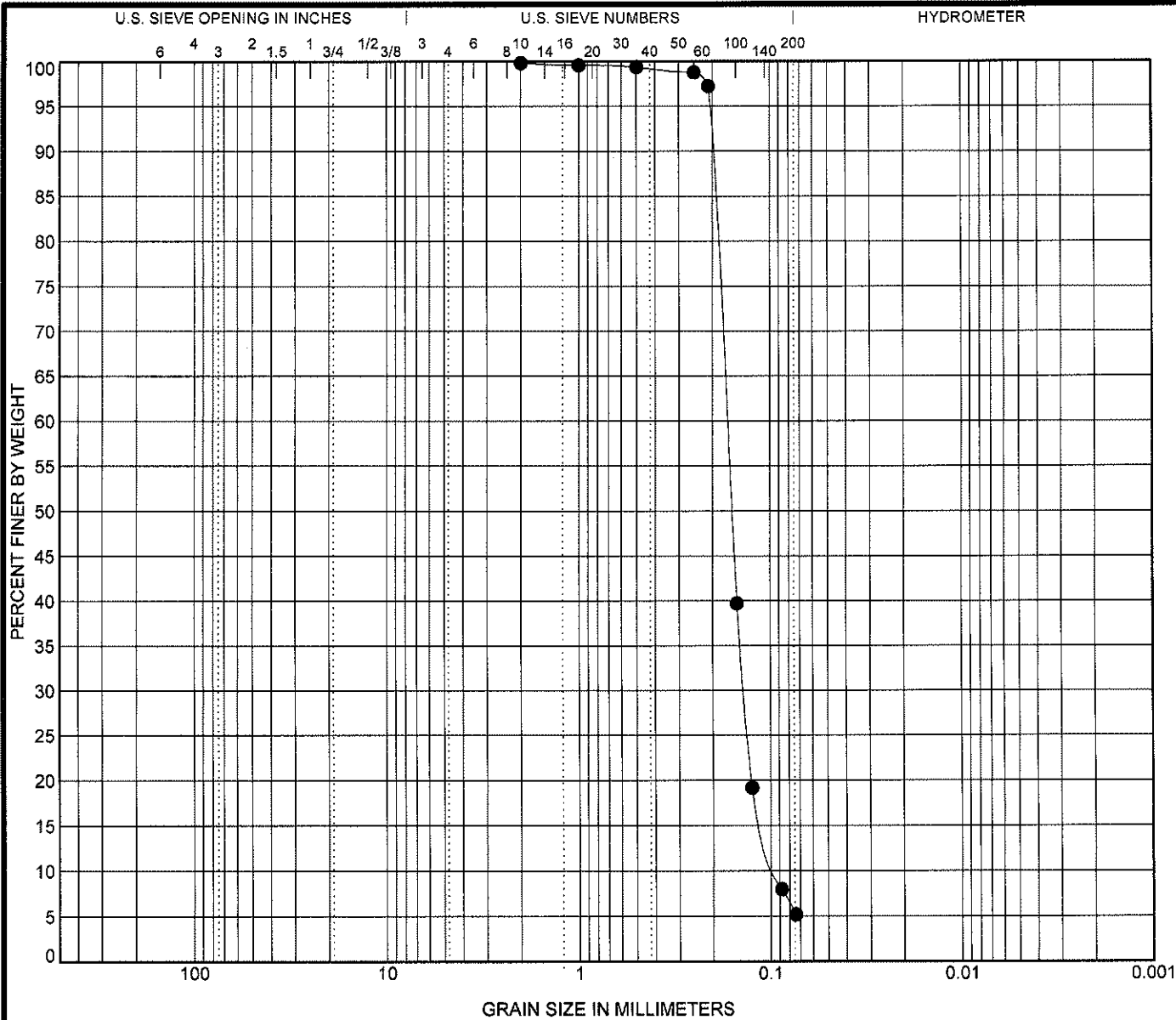
Specimen ID	Depth	Classification				LL	PL	PI	Cc	Cu
● AA-13	(-37' to -38' NAVD)	Borrow Area (-37' to -38' NAVD)							1.31	2.01
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
● AA-13	(-37' to -38' NAVD)	2	0.166	0.134	0.083	0.0				



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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-13	(-40' to -41' NAVD)	Borrow Area (-40' to -41' NAVD)							1.19	1.79
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
● AA-13	(-40' to -41' NAVD)	2	0.168	0.137	0.094	0.0				



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GRAIN SIZE DISTRIBUTION

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LOG OF BORING AA-13

SHEET 1 OF 2



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CLIENT: HDR Engineering, Inc.
PROJECT: Anchorage Basin Sand Source Investigation
LOCATION: Anchorage Basin, Galveston, Texas
NUMBER: G109112

DATE(S) DRILLED: 03/11/09 - 03/11/09

DRILLING METHOD(S):

Vibracore

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -32' NAVD

DESCRIPTION OF STRATUM

SOIL SYMBOL	FIELD DATA				LABORATORY DATA						
	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 (%)
						LL	PL	PI			
	21										
	22										
	23										
	24										
	25										
	26										
	27										
	28										
	29										
	30										
	31										
	32										
	33	S-1									2
	34	S-2									
	35	S-3									11
	36	S-4									19
	37	S-5									
	38	S-6									9
	39	S-7									
	40	S-8									

POORLY GRADED SAND, with shell fragments, gray.

Same as above.

Same as above, with clay.

SILTY CLAYEY SAND, gray.

POORLY GRADED SAND, with clay, gray.

Same as above.

Same as above.

POORLY GRADED SAND, with clay, gray.

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 Ocean Surveys, Inc.
GPS Coord. N. 13,698,028' E. 3,318,672'

LOG OF BORING G109112 PROP. ANCHORAGE BASIN SAND SOURCE.GPJ ROCK ETL.GDT 4/28/09

LOG OF BORING AA-13

SHEET 2 OF 2



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DRILLING METHOD(S):

Vibracore

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -32' NAVD

DESCRIPTION OF STRATUM

Same as above.

Same as above.

Boring was extended to an elevation of -42-feet NAVD during the drilling operations.

FIELD DATA

LABORATORY DATA

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 (%)
						LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI			
	41	S-9									5
	42	S-10									

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 P - POCKET PENETROMETER RESISTANCE
 T - POCKET TORVANE SHEAR STRENGTH

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