



- Geotechnical Engineering
- Construction Materials Testing

PROJECT NAME: Anchorage Basin Sand Source Investigation

CLIENT: HDR Engineering, Inc.

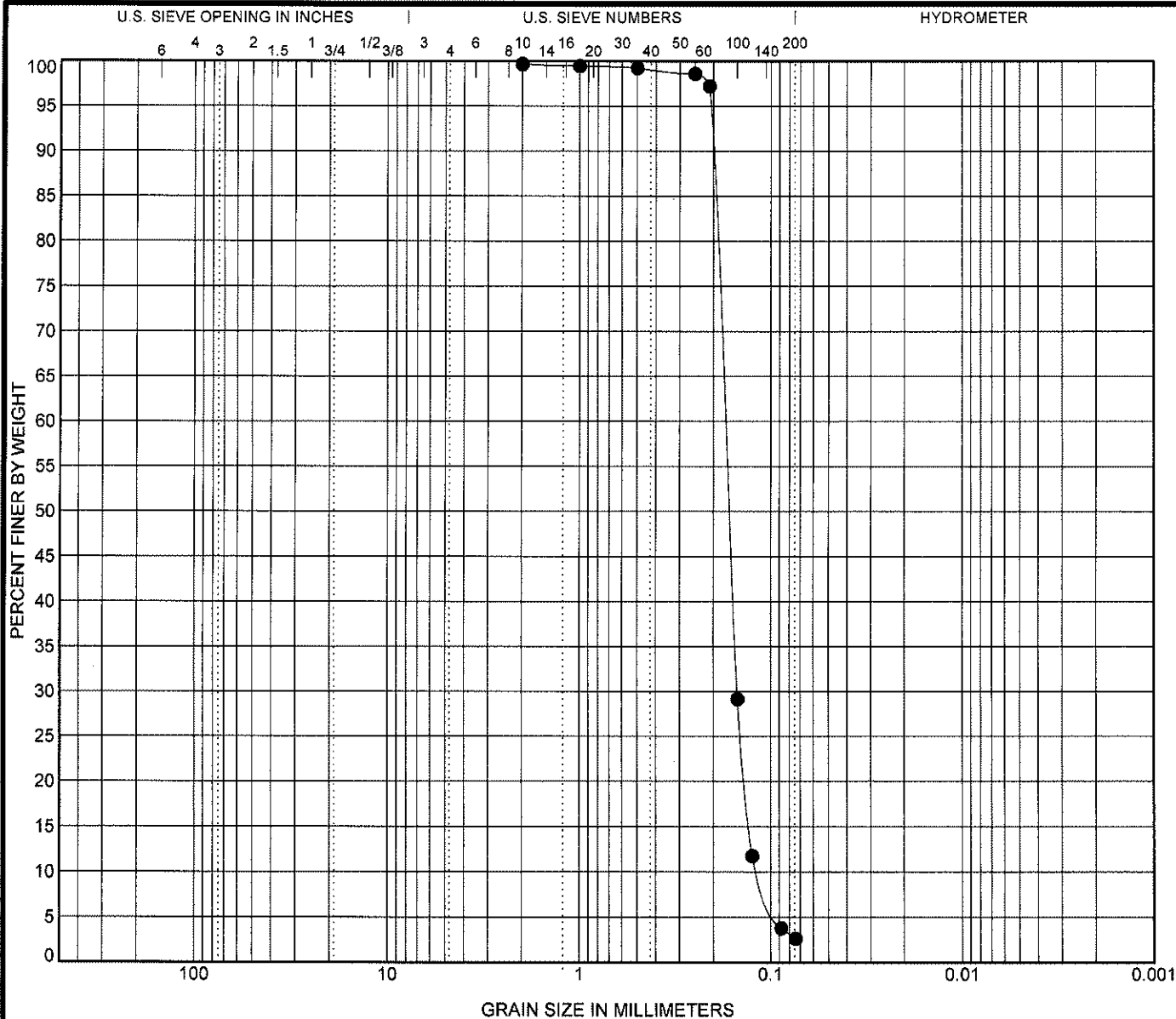
BORING ID.: AA-18

DESCRIPTION: Anchorage Basin Borrow Source Area

PERCENT SHELL BY WEIGHT (BASED ON #10 SIEVE)				
-30' to -31' NAVD	-33' to -34' NAVD	-35' to -36' NAVD	-37' to -38' NAVD	-39' to -40' NAVD
0.33	0.13	0.92	0.04	0.03

ASTM MESH	% FINER BY WEIGHT AFTER REMOVING SHELL				
	-30' to -31' NAVD	-33' to -34' NAVD	-35' to -36' NAVD	-37' to -38' NAVD	-39' to -40' NAVD
#10	100.00	100.00	100.00	100.00	100.00
#18	99.47	99.72	98.20	99.88	99.92
#35	99.23	99.39	96.64	99.61	99.87
#60	98.62	97.91	92.16	99.22	99.69
#70	97.22	94.66	88.18	98.30	99.22
#100	29.15	28.94	59.31	64.78	41.17
#120	11.76	10.88	42.55	48.43	18.25
#170	3.80	1.70	32.13	37.17	5.28
#200	2.65	1.05	30.51	34.93	3.28
STATISTICS (EXCLUDING SHELL)					
MEDIAN GRAIN SIZE (mm)	0.17	0.17	0.14	0.14	0.17
MEAN GRAIN SIZE (mm)	0.17	0.17	N/A	N/A	0.16
SORTING (σ)	0.25	0.24	N/A	N/A	0.33

*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	

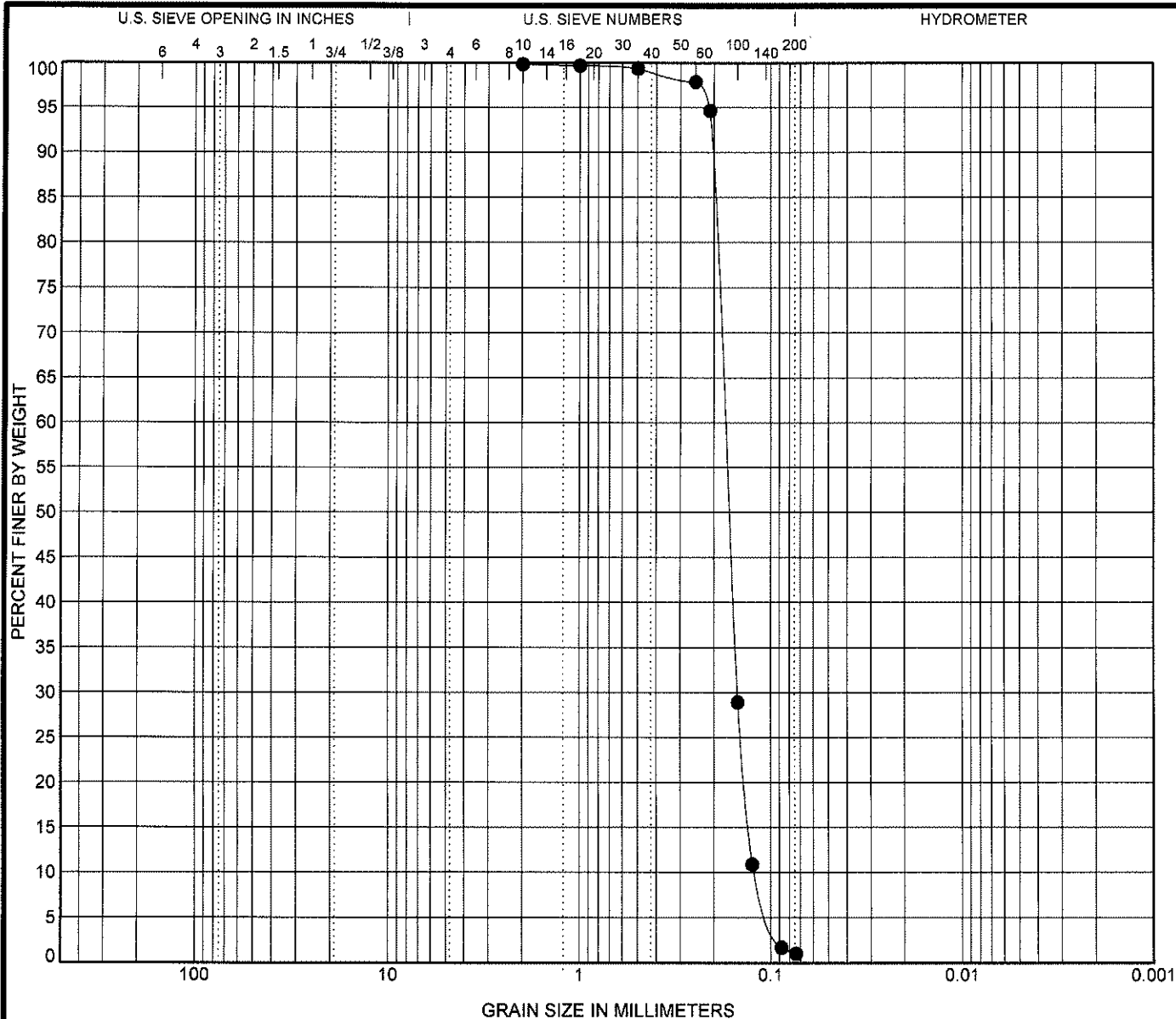
Specimen ID	Depth	Classification				LL	PL	PI	Cc	Cu
● AA-18	(-30' to -31' NAVD)	Borrow Area (-30' to -31' NAVD)							1.11	1.50
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
● AA-18	(-30' to -31' NAVD)	2	0.174	0.15	0.116	0.0				



Rock Engineering & Testing Lab., Inc.
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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-18	(-33' to -34' NAVD)	Borrow Area (-33' to -34' NAVD)				1.06	1.45

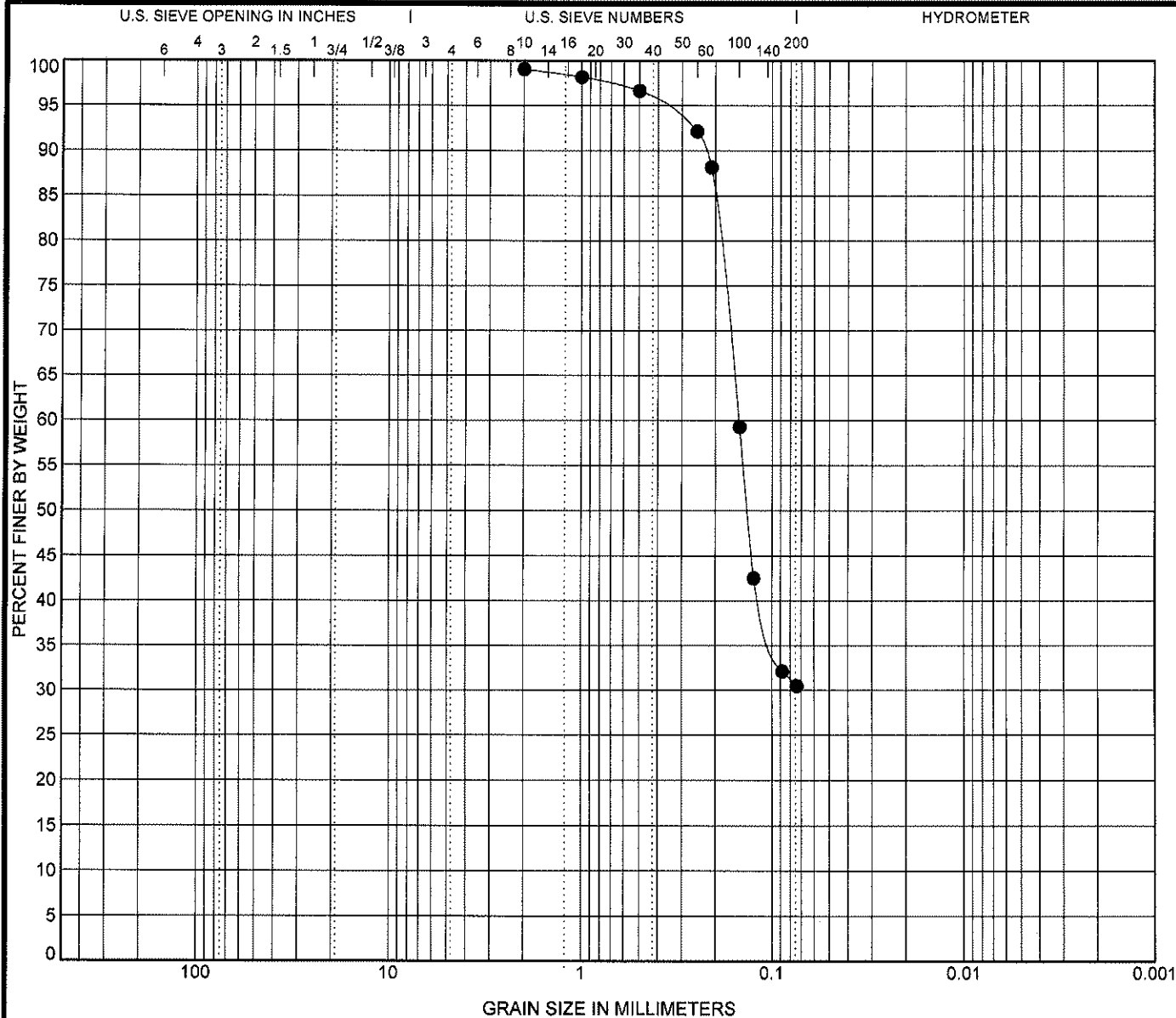
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-18	(-33' to -34' NAVD)	2	0.175	0.15	0.121	0.0			



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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-18	(-35' to -36' NAVD)	Borrow Area (-35' to -36' NAVD)					

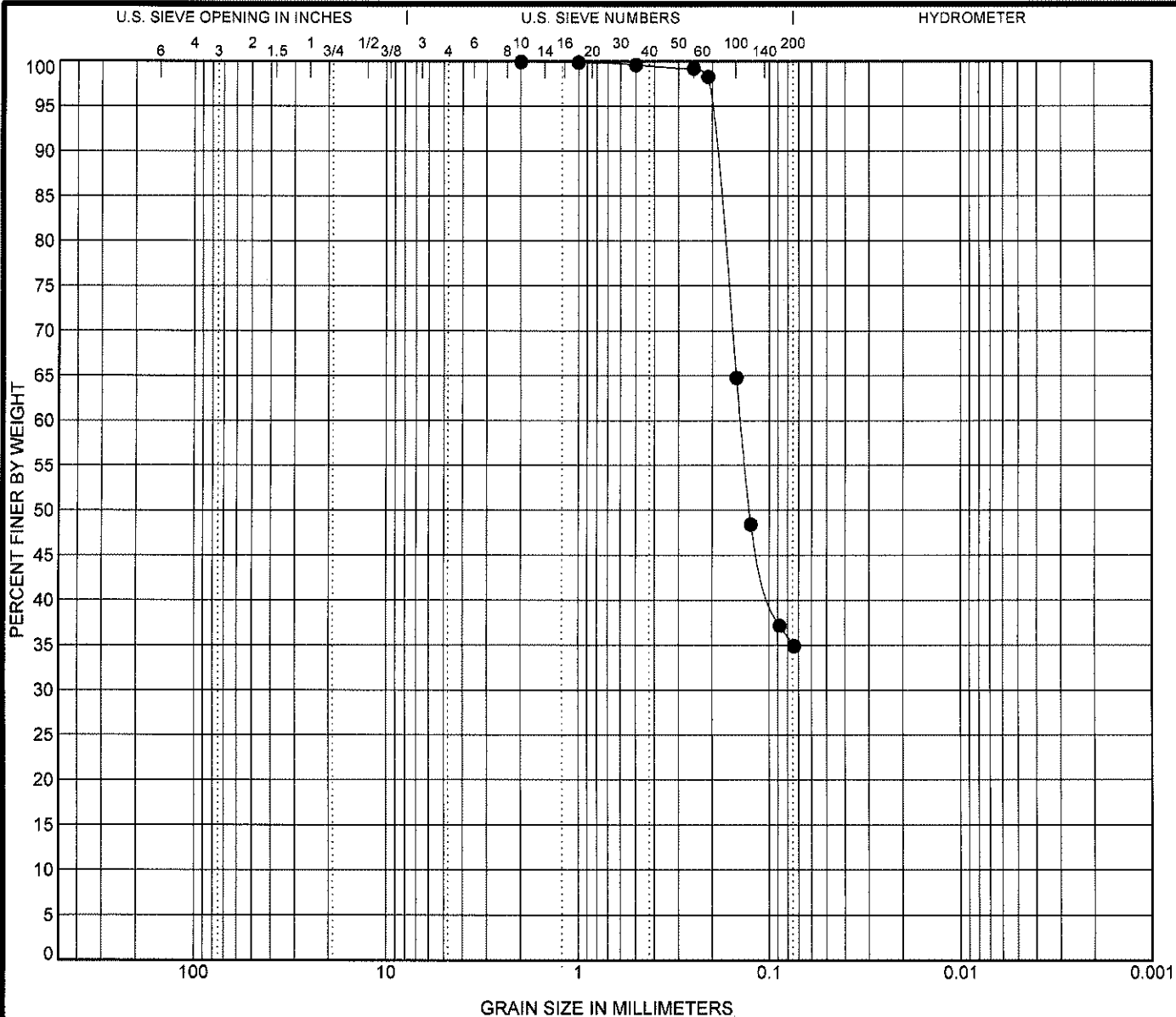
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-18	(-35' to -36' NAVD)	2	0.15			0.0			



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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-18	(-37' to -38' NAVD)	Borrow Area (-37' to -38' NAVD)					

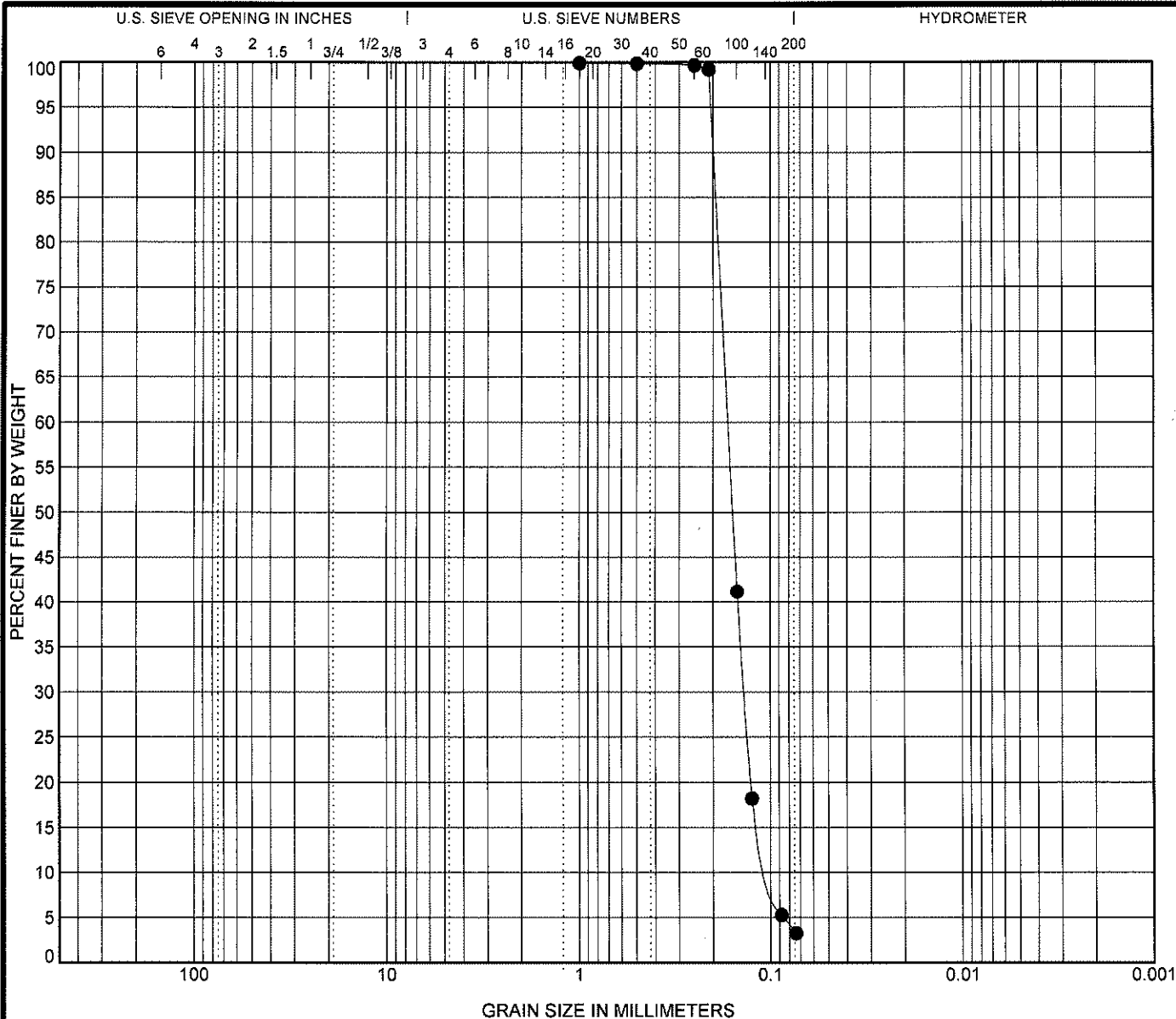
Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-18	(-37' to -38' NAVD)	2	0.142			0.0			



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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-18 (-39' to -40' NAVD)		Borrow Area (-39' to -40' NAVD)				1.12	1.67

Specimen ID	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● AA-18 (-39' to -40' NAVD)		1	0.167	0.137	0.1	0.0			



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GRAIN SIZE DISTRIBUTION

Project: Anchorage Basin Sand Source Investigation
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LOG OF BORING AA-18

SHEET 1 OF 2



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Telephone: (361) 883-4555
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CLIENT: HDR Engineering, Inc.
PROJECT: Anchorage Basin Sand Source Investigation
LOCATION: Anchorage Basin; Galveston, Texas
NUMBER: G109112

DATE(S) DRILLED: 03/13/09 - 03/13/09

DRILLING METHOD(S):

Vibracore

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -30' 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 (%)	
						LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI				
	19											
	20											
	21											
	22											
	23											
	24											
	25											
	26											
	27											
	28											
	29											
	30											
	31	S-1									3	POORLY GRADED SAND , with shell fragments, gray. Same as above. Same as above.
	32	S-2										
	33	S-3										
	34	S-4									1	POORLY GRADED SAND , gray. Same as above.
	35	S-5										
	36	S-6									31	CLAYEY SAND , 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. 13,699,496' E. 3,319,957'

LOG OF BORING G109112 PROP. ANCHORAGE BASIN SAND SOURCE.GPJ ROCK_ETL_GDT 4/28/09

LOG OF BORING AA-18

SHEET 2 OF 2



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Vibracore

GROUNDWATER INFORMATION:

SURFACE ELEVATION: -30' NAVD

DESCRIPTION OF STRATUM

Same as above.

Same as above.

POORLY GRADED SAND, gray.

Same as above.

Boring was extended to an elevation of -40-feet NAVD during the drilling operations.

N - STANDARD PENETRATION TEST RESISTANCE
 P - POCKET PENETROMETER RESISTANCE
 T - POCKET TORVANE SHEAR STRENGTH

REMARKS:

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