

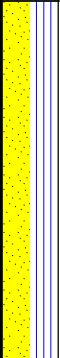
BORING LOG NO. B-19

Page 1 of 1

PROJECT: Galveston Bay Sand Reclamation Project

CLIENT: Atkins North America, Inc.
Houston, Texas

SITE: Galveston Bay
Galveston, Texas

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 29.31039° Longitude: -94.82731° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI	
	<u>CLAY</u> , gray, very soft			X	WOH							
	<u>POORLY GRADED SAND WITH SILT (SP-SM)</u> , gray, loose to medium dense - with clay pockets 2 to 4 feet - with shell fragments 6 to 10 feet	5		X	2-2-4 N=6							
				X	3-4-5 N=9							11
				X	6-8-10 N=18							
				X	8-11-12 N=23							
	<u>CLAY</u> , gray, soft to very stiff - reddish brown and light gray, with ferrous nodules below 12 feet	10		X	1-1-1 N=2							
					3.5 (HP)							
	Boring Terminated at 14 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Dry augered to 10 feet; wet rotary thereafter.

Abandonment Method:
Not applicable

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:
- WOH = Weight of Hammer.
- Water depth of about 13 feet at the time of our field program.

WATER LEVEL OBSERVATIONS

Not applicable

Terracon
551 League City Pkwy Ste F
League City, TX

Boring Started: 07-17-2017

Drill Rig: Truck

Project No.: 91175047

Boring Completed: 07-17-2017

Driller: Van and Sons

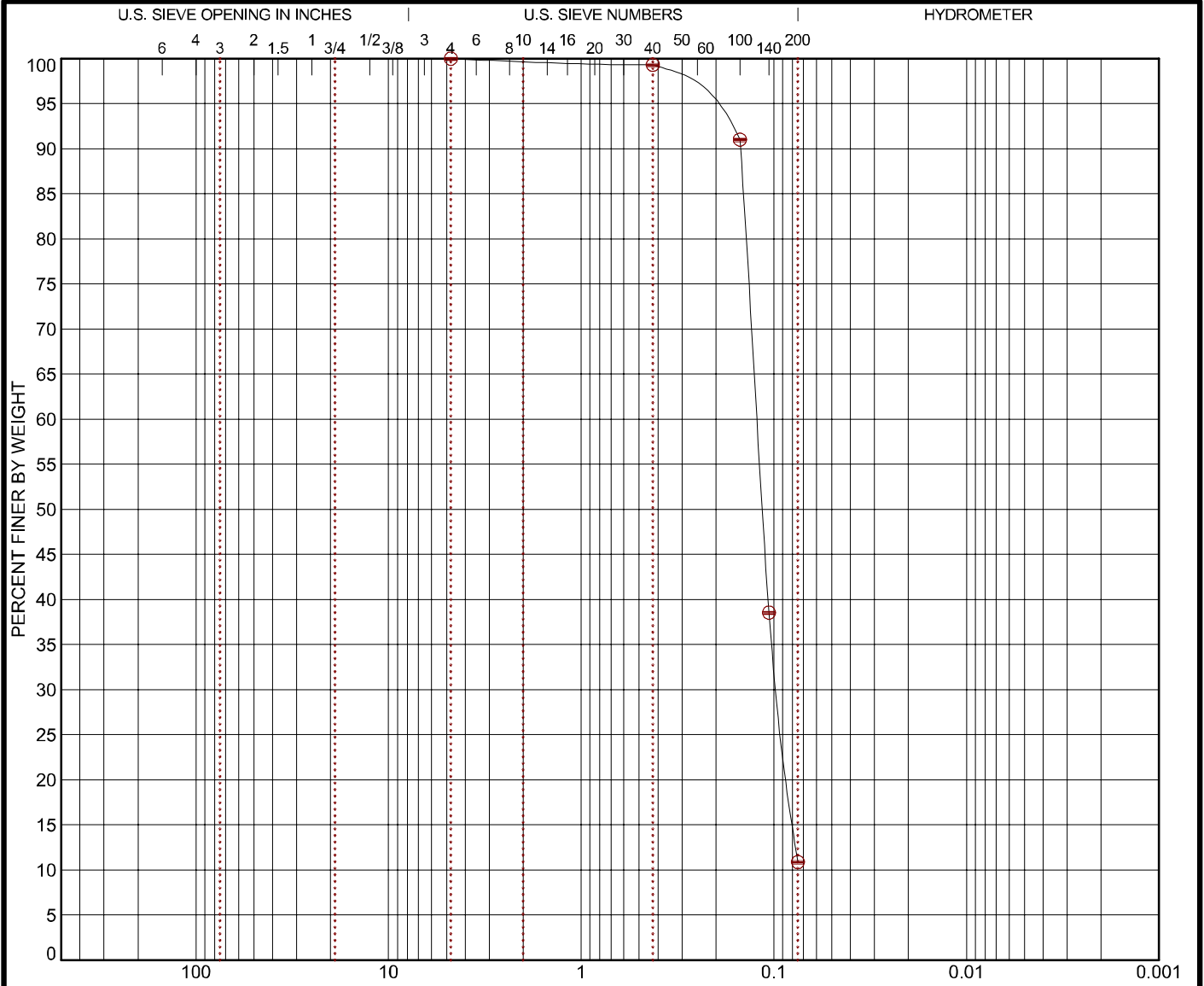
Exhibit: A-21

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 91175047.REV1 GALVESTON BAY SAN.GPJ TERRACON_DATATEMPLATE.GDT 11/2/17

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. 91175091_ATKINS_NORTH_GRAINSIZE_TEMP_91175047 GALVESTON BAY SAN.GPJ TERRACON_DATATEMPLATE.GDT 11/6/17



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification				WC (%)	LL	PL	PI	Cc	Cu
B-19	4.5 - 6	POORLY GRADED SAND WITH SILT (SP-SM)								1.00	1.65
Boring ID	Depth	D ₁₀₀	D ₈₅	D ₅₀	D ₁₀	%Gravel	%Sand	%Silt	%Fines	%Clay	
B-19	4.5 - 6	4.75	0.144	0.114		0.0	89.1		10.9		

PROJECT: Galveston Bay Sand Reclamation Project	 551 League City Pkwy Ste F League City, TX	PROJECT NUMBER: 91175047
SITE: Galveston Bay Galveston, Texas		CLIENT: Atkins North America, Inc. Houston, Texas
		EXHIBIT: A-36