

ALEXANDER ISLAND BORING SUMMARY SHEET

BORING ID:	<u>13-P02</u>
BORING TYPE:	<u>Perimeter Levee</u>
DEPTH:	<u>60'</u>
ELEVATION:	<u>24.82'</u>
X (US SURVEY FT):	<u>3225272.89</u>
Y (US SURVEY FT):	<u>13827557.13</u>
DEPTH TO WATER:	<u>9.6'</u>

Contract Number: W912HY-13-D-001-DY06

Client: USACE-Galveston District Boring: 13-P02
 Date/Time Drilling Begun: 11.27.13/0915 Date/Time Drilling Ended: 12.3.13/1545
 Driller: Jason New Logger: Eddie Ficker Designated X (Easting): Long: -95.0400323
 Drill Rig: Mobile B57 Designated Y (Northing): Lat: 29.7115908 Z (Elevation): Top of existing levee
 Total depth: 60.0 Initial Water Encounter (Depth, date/time): 10.5 ft, 11.27.13/10:53 Water Depth (15 min.): 9.6 ft

Existing Levee / Fill Material 14.11 ft

Feet	USCS Log	Sample Interval (ft)	Amount Material Obtained (in)	Sample Type Blow Counts	Number of Tubes	Pocket Pene. (tsf)	Shear Strength (tsf)	Description (SOIL TYPE, color, moisture, plasticity, consistency, density, inclusions, etc.)
0								
18"	CL	0-2	18	ST	1 T	0.75	-	Very Sandy, Silty CLAY, Grayish Brown + Light Yellowish Orange, Moist, Low Plast., Abundant Roots to 6"
39"	SM	2-4	13	SS 4-9-11	1 B	-	-	Silty SAND, Very light Grayish Brown, Moist, Loose to Med. Dense, SA is F-C, Slightly Clayey, occasional shell frags
5' 6'	SC	4-6	12	ST	1 B	2.0	-	Clayey SAND, Yellowish + Black, Moist, Loose to Med. Dense, Common Shell Frags, Common Silty Clay Layers
7'9"	CL	6-8	16	SS 3-3-3	1 T	0	0.04	Sandy, Silty CLAY, Yellowish + Orange + Very Dark Gray, Moist, High Plast., SA is F-C, Med to Very Sandily
7'9"	SC	8-10	10	ST	1 B	-	-	Very Clayey SAND, Yellowish + Light Orange + Gray, Moist, Med. Dense, SA is Occasional Shell Frags
10'	CH/SC	10-12	18	SS 1-6-9	1 B	-	-	Alternating Mix of Very clayey SAND + CLAY → CH is Reddish Brown, Moist, High Plast., Stiff, Common caliche nodules
12'	SM/SC	12-14	16	SS 4-4-7	1 B	-	-	Clayey, Silty SAND, Yellowish Orange, Wet, Loose to Med. Dense, F-C, SA is Common Shell Frags + Caliche nodules
15' 15'9" 16'	CH	14-16	18	SS 2-3-2	1 B	-	-	S.A.A., Very Clayey, Common loose, pea-sized gravel → Black chert → sub round CLAY, Mottled + Yellowish orange, Moist, High Plast., light Gray STIFF CH 15'9" 16'
18'	SM	16-18	20	ST	1 B	-	-	Very Silty SAND, Light Brownish Gray, Wet, Loose, SA is F-C from 16' to 17'3" + Common shell frags
20'	SM/ML	18-20	15	SS 2-2-2	1 B	-	-	S.A.A.; Abundant Gray Silty CLAY / clayey SILT Lams from 19'5" to 20'

Weather: Sunny, Slight Breeze ~48°F

Comments: SA = SAND; F-C = Fine to Coarse Grained; Lams = Laminations; S.A.A. = Same as above; Plast = plasticity; Frags = Fragments

USCS Log Legend:



US Army Corps of Engineers, Southwestern Division
 Galveston District
 2000 Fort Point Road/P.O. Box 1229
 Galveston, TX 77553-1229

Alexander Island
 Houston Ship Channel
 Baytown, TX



Quaternary Resource Investigations, L.L.C.
 Government & Industry in Harmony with the Environment
 13588 Florida Boulevard, Baton Rouge, Louisiana 70819

Client: USACE-Galveston District

Boring: 13-P02

Page 2 of 3

END
11-27-13
1400
START
12-3-13
@ 0900

Feet	USCS Log	Sample Interval (ft)	Amount Material Obtained (in)	Sample Type Blow Counts	Number of Tubes	Pocket Pene. (tsf)	Shear Strength (tsf)	Description (SOIL TYPE, color, moisture, plasticity, consistency, density, inclusions, etc.)
20	SM	20-22	10	SS 1-3-7	2 ^{1B} IT	-	-	S.A.A. from 20 to 21" / silty SAND, Dark Grey, 21 to 21'8" CLAY (OH), Black, Moist, High Plast., Soft / Wet, Loose, F-C, Carbonaceous
21	OH							21'8"
22	SM							22'
22	SC	22-24	13	SS 1-2-3	2 ^{1B} IT	0.25	0.07	Clayey SAND, Dark Grey, Wet, V. Loose, SA is F. Becoming CH to OH
24	OH							22'4"
25	SC	24-26	12	ST	∅	-	-	No Recovery
27	CL	26-28	14	ST	2 ^{1B} IT	∅	0.25	Silty clayey SAND, Grayish Brown, Wet, Loose, Common Shell frags silty CLAY, Gray, Moist, Med-High Plast., V. Soft; Abundant Fine SA Lams
28		28-30	15	ST	1 ^B	-	-	Silty SAND, Light Gray, Wet, Loose, F-C,
30	SM	30-32	16	SS WOR-7-15	1 ^B	-	-	S.A.A., Med. dense
32		32-34	18	SS 8-17-18	1 ^B	-	-	S.A.A., Moist, Dense
34		34-36	18	SS 4-4-3	1 ^B	-	-	S.A.A., Wet, Occasional Carbonaceous frags
36	OH	36-38	18	SS 2-3-5	1 ^T	0.25	0.5	CLAY, Black, Moist, High Plast., Becoming Dk Gray @ 38'
40	SC	38-40	18	ST	2 ^{1B} IT	-	-	Silty, Clayey SAND, Dark Gray, Moist, SA is F., Carbonaceous, Occasional shell frags.

Weather: Sunny Slight breeze, ~48°F (11.27.13); Sunny, Breezy ~75°F (12.3.13)

Comments: S.A.A. = Some as above; Plast. = plasticity; V. = Very; F-C = fine to coarse grained; Frags = fragments; Lams = laminations; WOR = weight of rod

USCS Log Legend:



US Army Corps of Engineers, Southwestern Division
Galveston District
2000 Fort Point Road/P.O. Box 1229
Galveston, TX 77553-1229

Alexander Island
Houston Ship Channel
Baytown, TX



Quaternary Resource Investigations, L.L.C.
Government & Industry in Harmony with the Environment
13588 Florida Boulevard, Baton Rouge, Louisiana 70819

Client: USACE-Galveston District

Boring: 13-P02

of 3

Total depth: 60.0

Date/Time Drilling Ended: 12.3.13 / 1545

Feet	USCS Log	Sample Interval (ft)	Amount Material Obtained (in)	Sample Type Blow Counts	Number of Tubes	Pocket Pene. (tsf)	Shear Strength (tsf)	Description (SOIL TYPE, color, moisture, plasticity, consistency, density, inclusions, etc.)
40	SM/M	40-42	18	SS 1-2-2	1 B	-	-	Very Silty SAND, Dark Gray, Wet, Very Loose, Slightly SA is Common Shell frags
		42-44	17	SS WOR-1-3	1 B	-	-	S.A.A., Gray, Occasional Shell frags
44	SM	44-46	18	SS 1-2-3	1 B	-	-	S.A.A., SA is F-C, (Common Shell frags) Abundant Alternating (Banded) Sandy Silt Lams
45		46-48	18	SS 1-2-2	1 B	-	-	S.A.A.
		48-50	18	SS WOR-1-3	1 B	-	-	S.A.A.
50		50-52	14	SS WOR-1-2	1 B	-	-	S.A.A.
		53.5-55	17	SS WOR-1-3	1 B	-	-	S.A.A.
55								
		58.5-60	17	SS WOR-1-2	1 B	-	-	S.A.A. Abundant Alternating (Banded) Sandy Silt Lams

END
12.3.13
1545

Weather: Sunny, Breezy, ~75°F

Comments: S.A.A. = Same as above; F-M = Fine to Medium Grained; F-C = Fine to Coarse Grained

Frags = fragments; lams = laminations; SA = SAND; WOR = Weight of rods

USCS Log Legend: Backfilled hole with cuttings to surface



US Army Corps of Engineers, Southwestern Division
Galveston District
2000 Fort Point Road/P.O. Box 1229
Galveston, TX 77553-1229

Alexander Island
Houston Ship Channel
Baytown, TX



Quaternary Resource Investigations, L.L.C.
Government & Industry in Harmony with the Environment
13588 Florida Boulevard, Baton Rouge, Louisiana 70819

COPY OF PEGGY LAKE GEOTECH BH - PEGGY LAKE TEMPLATE GDT - 4/4/14 15:03 - F:\QRI DATA\TECHNICAL\JOBS (CURRENT)\AGE - GALVESTON\2012-12-20 GEOTECHNICAL\CONTRACT\TASK ORDER DY06 2013-09-10 ALEXANDER ISLAND\DELIVERABLES\ALEX



Quaternary Resource Investigations, LLC
 13588 Florida Boulevard
 Baton Rouge, LA 70820
 Telephone: 225-292-1400
 Fax: 225-292-1404

BORING NUMBER 13-P02

PAGE 1 OF 2

CLIENT USACE-Galveston District **PROJECT NAME** Alexander Island
PROJECT NUMBER W912HY-13-D-0001-DY06 **PROJECT LOCATION** Alexander Island, Baytown, TX
DATE STARTED 11/27/2013 9:15:00 AM **COMPLETED** 12/3/2013 3:45:00 PM **GROUND ELEVATION** 24.8184 ft **HOLE SIZE** 8.25 inches
DRILLING CONTRACTOR QRI **NORTHING** 13827557 ft **EASTING** 3225273 ft
DRILLING METHOD Hollow Stem Auger **DRILLING RIG MAKE/MODEL** Mobile B57 on Gemco Articulated Platform
LOGGED BY Eddie Ficker **TOTAL DEPTH** 60 ft **GROUND WATER LEVEL** ∇ AT TIME OF DRILLING 10.50 ft / Elev 14.32 ft
WEATHER sunny, 48-75, slight breeze to breezy **∇ 24 HOURS AFTER DRILLING** 9.60 ft / Elev 15.22 ft

GRAPHIC LOG	USCS SYMBOL	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE	RECOVERY (in)	SPT BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	FIELD TORVANE (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			MINUS #200 SIEVE CONTENT (%)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)
											LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX				
	CL	Very sandy, silty CLAY; grayish brown and light yellowish orange, moist, low plasticity, roots abundant to 6" sand is fine to coarse grained, slightly clayey, very light grayish brown, moist, loose to medium dense, with occasional shell fragments	0	ST	18		0.75		109	17	34	12	22	61			
				SS	13	4-9-11 (20)					11						
	CH	CLAY; yellowish orange and black, moist, loose to medium dense, with common shell fragments and common silty clay and clay layers clay is yellowish orange and very dark gray, moist, medium to high plasticity; sand is fine to coarse grained yellowish orange and light gray, moist, medium dense, with occasional shell fragments	5	ST	12		2.0			18							
				SS	16	3-3-3 (6)	0.04	84	32	76	23	53	84	0.35	5	6	
	CH	Alternating mix of CLAY (CH)-reddish brown, moist, high plasticity, stiff, with caliche nodules common and very clayey SAND (SC)-fine to coarse grained, wet, medium dense, with shell fragments common	10	ST	10					18				72			
				SS	18	1-6-9 (15)				29							
	SM	very clayey, loose, pea-sized gravel (black chert, sub round) common light gray and yellowish orange mottled, moist, high plasticity, stiff Very silty SAND; fine to coarse grained, light brownish gray, wet, loose, with common shell fragments	15	SS	16	4-4-7 (11)				25				61			
				SS	18	2-3-2 (5)			23								
	SM	abundant silty CLAY/clayey SILT laminations, gray	20	ST	20					22							
				SS	15	2-2-2 (4)			24						28		
	CH	CLAY; black, moist, high plasticity, soft Silty SAND; fine to coarse grained, dark gray, wet, loose, carbonaceous	25	SS	10	1-3-7 (10)			65	51					0.32	3	12
				SS	13	1-2-3 (5)	0.25	0.07	54	73							
	SC	Clayey SAND; fine grained, dark gray, wet, very loose CLAY; black, moist, high plasticity, very soft	25	ST	12					29							
				ST	14		0	0.25	73	53							
	CL	Silty clayey SAND; grayish brown, wet, loose, with common shell fragments Silty CLAY; gray, moist, medium to high plasticity, very soft, with abundant fine sand laminations	30	ST	15					30							
				SS	16	0-7-15 (22)			20						15		
	SC	Clayey SAND; fine to coarse grained, light gray, wet, loose moist, dense		SS	18	8-17-18 (35)				20							
				SS													
	SP-		35			4-4-3											

(Continued Next Page)

