

# ALEXANDER ISLAND BORING SUMMARY SHEET

<b>BORING ID:</b>	<u>13-B01</u>
<b>BORING TYPE:</b>	<u>Borrow Source</u>
<b>DEPTH:</b>	<u>15'</u>
<b>ELEVATION:</b>	<u>26.07'</u>
<b>X (US SURVEY FT):</b>	<u>3224839.86</u>
<b>Y (US SURVEY FT):</b>	<u>13829574.96</u>
<b>DEPTH TO WATER:</b>	<u>2.75'</u>

Client: USACE-Galveston District      Boring: 13-B01      Page 1 of 1  
 Date/Time Drilling Begun: 12.17.13/1300      Date/Time Drilling Ended: 12.17.13/1420  
 Driller: Jason New      Logger: Eddie Ficker      Designated X (Easting): 3224840  
 Drill Rig: Mobile B57      Designated Y (Northing): 13829575      Z (Elevation):  
 Total depth: 15.0      Initial Water Encounter (Depth, date/time): 3.7 ft 12.17.13/1322      Water Depth (15 min.): 2.75'

1300  
Pledge  
1100

1420

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								V. Light Yellowish Orange F-C SA @ surface to 3"
0-2	CH	0-2	9	ST	1 T	1.0	-	CLAY, Light Yellowish Orange, Moist, Med. STIFF to STIFF, Mixed with Very light Yellowish Orange F-C SA
2-4	CH	2-4	12	ST	1 T	2.0-2.5	-	S.A.A. STIFF to V. STIFF SAA
4-6	SM	4-6	14	ST	1 B	-	-	Silty, (F-C) SAND, Light Gray, Wet, V. Loose,
8-10	SM	8-10 8.5-10	2	SS WOR-WOR-WOR	1 B	-	-	Terrible recovery! V. Silty SAND (F-M), Wet V. Loose
13.5-15	SM	13.5-15	11	SS 1-2-2	1 B	-	-	S.A.A. slightly clayey

Weather: Sunny, ~65°F, Calm

Comments: S.A.A. = same as above      V. = Very      B = bag, T = tube

F-C = fine to coarse grained

Med = medium

WOR = weight of rods

F-M = fine to medium grained

SA = SAND

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

COPY OF PEGGY LAKE GEOTECH BH - PEGGY LAKE TEMPLATE GDT - 4/4/14 15:02 - 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-B01**

**CLIENT** USACE-Galveston District      **PROJECT NAME** Alexander Island  
**PROJECT NUMBER** W912HY-13-D-0001-DY06      **PROJECT LOCATION** Alexander Island, Baytown, TX  
**DATE STARTED** 12/17/2013 1:00:00 PM **COMPLETED** 12/17/2013 2:20:00 PM **GROUND ELEVATION** 26.0681 ft      **HOLE SIZE** 8.25 inches  
**DRILLING CONTRACTOR** QRI      **NORTHING** 13829575 ft      **EASTING** 3224840 ft  
**DRILLING METHOD** Hollow Stem Auger      **DRILLING RIG MAKE/MODEL** Mobile B57 on Gemco Articulated Platform  
**LOGGED BY** Eddie Ficker      **TOTAL DEPTH** 15 ft      **GROUND WATER LEVEL** ∇ AT TIME OF DRILLING 3.70 ft / Elev 22.37 ft  
**WEATHER** sunny, 65, calm      **24 HOURS AFTER DRILLING** ∇ 2.75 ft / Elev 23.32 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				
SW	CL	SAND; fine to coarse grained, very light yellow-orange, moist, no plasticity	0	ST	9		1.0			22	43	16	27				
		Sandy CLAY; light yellow-orange, moist, medium stiff to stiff, clay mixed with fine to coarse grained SAND, light yellow orange stiff to very stiff		ST	12		2.0-2.5			23							
SP-SC	CL	Clayey SAND; fine to coarse grained, light gray, wet, very loose	5	ST	14		-			23				11			
		Sandy CLAY; fine to coarse grained, light gray, wet, very loose		NR	0												
CL	CL	Sandy CLAY; fine to coarse grained, light gray, wet, very loose	10	SS	2	0-0-0 (0)	-			28				52			
		very silty, fine to medium grained sand		NR	0												
		slightly clayey	15	SS	11	1-2-2 (4)	-			33							

Bottom of borehole at 15.0 feet.



POINT	EASTING (X)	NORTHING (Y)	ELEV. (Z)	BORING
1	3,224,839.86	13,829,574.96	26.07	13-B01 SURVEYED
2	3,224,468.96	13,829,647.11	27.56	13-B02 SURVEYED
3	3,224,781.02	13,829,832.05	27.42	13-B03 SURVEYED
4	3,225,085.04	13,829,951.90	28.02	13-B04 SURVEYED
5	3,224,798.15	13,830,185.96	26.71	13-B05 SURVEYED
6	3,225,137.02	13,830,319.06	27.97	13-B06 SURVEYED
7	3,225,402.24	13,830,377.84	27.40	13-B07 SURVEYED
8	3,225,137.84	13,830,656.99	27.34	13-B08 SURVEYED
9	3,225,431.15	13,830,710.11	28.02	13-B09 SURVEYED
10	3,225,763.04	13,830,892.08	27.75	13-B10 SURVEYED
11	3,225,389.99	13,831,061.05	26.37	13-B11 SURVEYED
12	3,225,579.86	13,831,378.86	26.12	13-B12 SURVEYED
13	3,225,136.04	13,831,406.95	26.39	13-B13 SURVEYED
14	3,225,382.99	13,831,732.99	28.30	13-B14 SURVEYED
15	3,225,027.98	13,831,671.05	27.36	13-B15 SURVEYED
16	3,224,743.97	13,831,628.99	25.72	13-B16 SURVEYED
17	3,224,619.87	13,832,095.98	27.15	13-B17 SURVEYED
18	3,224,819.95	13,832,313.05	29.49	13-B18 SURVEYED
19	3,225,218.97	13,832,197.96	29.61	13-B19 SURVEYED
20	3,225,789.02	13,832,191.02	24.98	13-B20 SURVEYED
21	3,225,424.06	13,832,424.86	25.99	13-B21 SURVEYED
22	3,225,960.93	13,832,420.96	23.86	13-B22 SURVEYED
23	3,226,409.90	13,832,382.04	22.95	13-B23 SURVEYED
24	3,226,641.04	13,832,554.90	23.17	13-B24 SURVEYED
25	3,226,468.10	13,832,757.96	23.39	13-B25 SURVEYED
26	3,226,192.06	13,832,587.05	23.82	13-B26 SURVEYED
27	3,225,917.94	13,832,796.84	24.65	13-B27 SURVEYED
28	3,225,689.17	13,832,584.94	24.74	13-B28 SURVEYED
29	3,225,406.03	13,832,775.88	26.23	13-B29 SURVEYED
30	3,225,210.96	13,832,605.92	27.31	13-B30 SURVEYED
31	3,224,956.08	13,832,789.07	30.03	13-B31 SURVEYED
32	3,224,892.10	13,832,575.99	29.78	13-B32 SURVEYED
33	3,224,600.87	13,832,572.04	30.06	13-B33 SURVEYED
34	3,228,153.92	13,827,285.05	25.73	13-P01 SURVEYED
35	3,225,272.89	13,827,557.13	24.82	13-P02 SURVEYED
36	3,224,485.02	13,828,683.79	23.82	13-P03 SURVEYED
37	3,224,458.15	13,829,880.09	24.00	13-P04 SURVEYED
38	3,225,186.78	13,830,885.15	27.81	13-P05 SURVEYED

3,224,655.30 13,829,970.20 Via Exxon Mobil

3,225,009.40 13,830,410.30 Via Exxon Mobil

3,225,494.19 13,830,624.52 Via Exxon Mobil

3,225,508.40 13,831,329.60 Via QRI

3,225,326.00 13,831,726.80 Via QRI

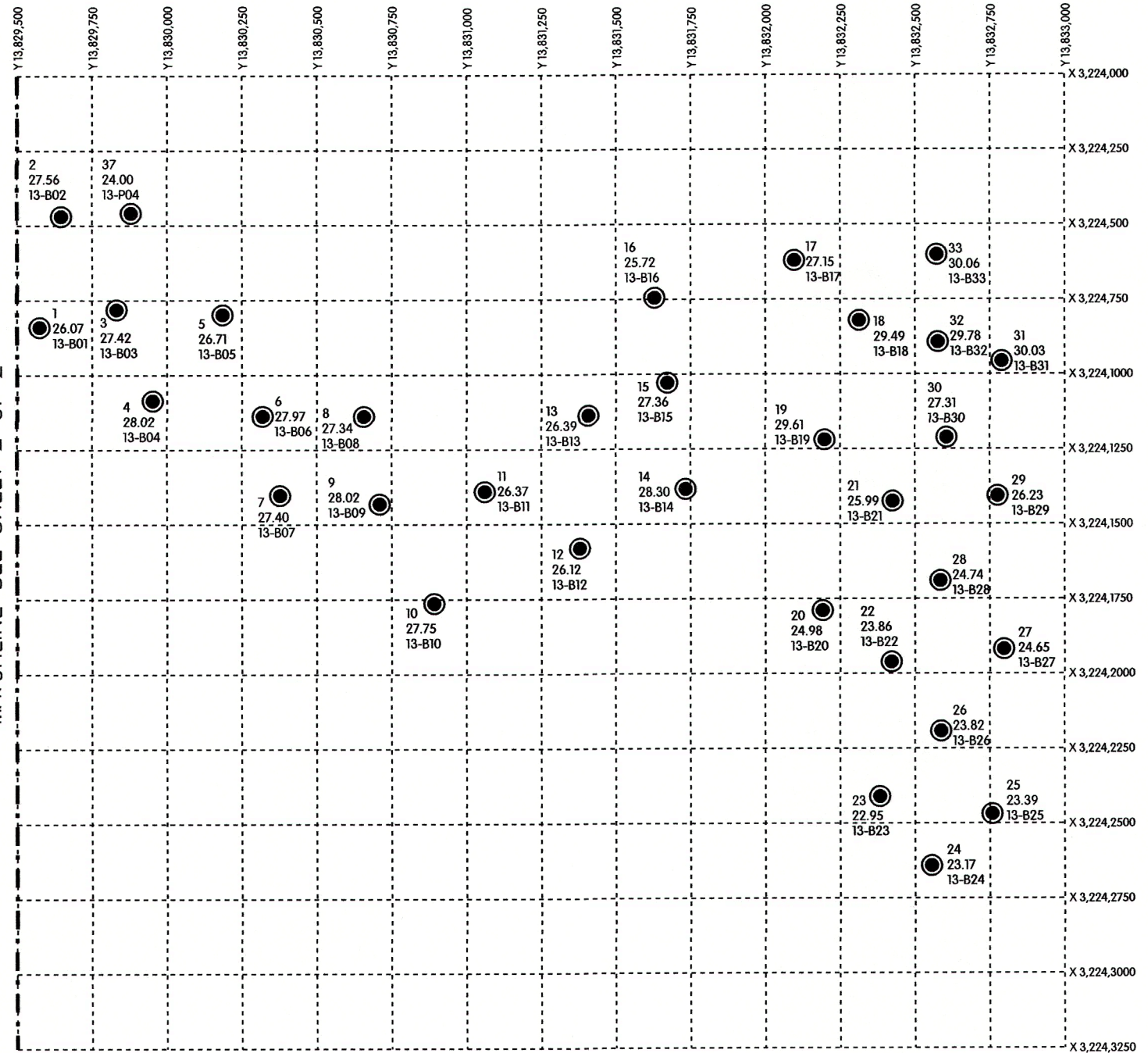
Removed from Contract

Removed from Contract

Removed from Contract

3,226,407.90 13,832,440.70 Via QRI

MATCHLINE SEE SHEET 2 OF 2



**PROJECT BENCHMARK:**

HARRIS COUNTY FLOODPLAIN REFERENCE MARK NUMBER 070020, BRASS DISC IN THE WEST END OF THE NORTH HEADWALL PARK ROAD 1836 APPROXIMATELY 845 FEET SOUTHEAST OF HIGHWAY 134

ELEV. 3.68 FEET, NAVD 1988, 2001 ADJUSTMENT.

THE MONUMENT IS CONSTRAINED TO THE NGS PUBLISHED ELEVATION FOR THE NORTHEAST 2250 CORPS ARP ADJUSTED BY NGS IN 2001 AND AS PUBLISHED IN PID AJ6430 EPOCH DATE 1997.00

RYAN 2006 CORPS OF ENGINEERS MONUMENT BRASS DISC IN CONCRETE LOCATED AT THE NORTHWEST CORNER OF PEGGY LAKE PLACEMENT AREA.

ELEV. 4.34, NAVD 88

**NOTES:**

1. THE COORDINATES SHOWN HEREON ARE TEXAS SOUTH CENTRAL ZONE NO. 4204 STATE PLANE GRID COORDINATES (NAD 83), AS DERIVED FROM GPS OBSERVATIONS.

GPS OBSERVATIONS ARE BASED ON THE SMARTNET SYSTEM OPERATED BY LEICA GEOSYSTEMS UTILIZING SPIDERNET SOFTWARE TO OBTAIN CENTIMETER ACCURACIES. MEASUREMENTS WERE MADE UTILIZING LEICA VIVA GS15 AND GS12 RECEIVERS.

2. ALL BORING LOCATIONS ARE AS NOTED IN THE TABLE ABOVE.

3. SMARTNET ADJUSTED STATION COORDINATES ARE TIED TO NAD83 (NA2011) DATUM AS DEFINED BY THE NGS CORS DATASHEETS OF THOSE STATIONS HELD FIXED IN THE ADJUSTMENT. FULLY CONSTRAINED ADJUSTED COORDINATES ARE REPORTED TO BE ACCURATE TO ABOUT +/-0.5 CM IN HORIZONTAL AND +/- 1.5 CM IN VERTICAL AT 95% CONFIDENCE (2-SIGMA) LEVEL.

4. BORE HOLES WERE ADJUSTED IN THE FIELD BY QRI STAFF AND SURVEYED IN THAT LOCATION COORDINATES FOR THAT LOCATION ARE AS SHOWN IN THE TABLE ABOVE.

I, KEVIN DREW MCRAE, A TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR, HEREBY CERTIFY THAT THIS SURVEY WAS PERFORMED ON THE GROUND BY ME OR UNDER MY SUPERVISION ON THIS THE 19TH DAY OF NOVEMBER, 2013.

*Kevin Drew McRae*  
 KEVIN DREW MCRAE  
 REGISTERED PROFESSIONAL LAND SURVEYOR  
 TEXAS REGISTRATION NO. 5485



Rev.	Date	By	Description

Drawn by:	X	CTC	DATE: 1/18/2014
Checked by:	X	KDM	BY: SUBSER
Submitted by:	X	BOBBY B. JOHNSON, P.E.	TIME: 2:54:30 PM
Approved by:	X	DAVID G. BROOKS, P.E.	
	X	DAVID G. BROOKS, P.E.	
	X	DAVID G. BROOKS, P.E.	
	X	DAVID G. BROOKS, P.E.	
	X	DAVID G. BROOKS, P.E.	
	X	DAVID G. BROOKS, P.E.	
	X	DAVID G. BROOKS, P.E.	

U.S. ARMY ENGINEER DISTRICT, GALVESTON  
 GALVESTON, TEXAS  
 PREPARED UNDER THE DIRECTION OF  
 CHRISTOPHER W. SALLESE, Col., C.E.,  
 DISTRICT COMMANDER

BORING HOLE LOCATIONS  
 TASK ORDER NO. DY06  
 CONTRACT NO. W912HY13-D-0001  
 ALEXANDER ISLAND PLACEMENT AREA  
 PASADENA, TEXAS  
 HARRIS COUNTY, TEXAS

**KM Surveying, LLC**

3902A REESE ROAD - SUITE 300  
 ROSENBERG, TEXAS 77471  
 713-234-6627  
 www.kmsurveying.com

DRAWN BY: CTC      CHECKED BY: KDM

Drawing No.:  
 Sheet 1 of 2  
 File No. xxx-xxx-xxx

