

ALEXANDER ISLAND BORING SUMMARY SHEET

BORING ID:	<u>13-B27</u>
BORING TYPE:	<u>Borrow Source</u>
DEPTH:	<u>15'</u>
ELEVATION:	<u>24.65'</u>
X (US SURVEY FT):	<u>3225917.94</u>
Y (US SURVEY FT):	<u>13832796.84</u>
DEPTH TO WATER:	<u>7.80'</u>

Client: USACE-Galveston District Boring: B-327
 Date/Time Drilling Begun: 12.6.13/905 Date/Time Drilling Ended: 12.6.13/1123
 Driller: Jason New Logger: Eddie Ficker Designated X (Easting): Long: -95.0374423
 Drill Rig: Mobile B57 Designated Y (Northing): Lat: 29.725936 Z (Elevation):
 Total depth: 15 Initial Water Encounter (Depth, date/time): 3.3 ft 12.6.13/1035 Water Depth (15 min.): 7.80 ft

PART 905
 Drilling Spacing Material
 END 1123

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	SM/SC	0-2	15	ST	1B	-	-	Clayey, Silty SAND. Light + orangish + v. light Greyish Brown Brown + Grey, Moist. M. Dense, Root
2	CH	2-5	12	SS 3-3.5	1"	1.0	-	CLAY, Yellowish Orange, Moist, Silty, Mixed w/ Grey silty SAND (F-C)
5	CH	5-7	12	ST	1"	0.5	-	SAA. w/ Light Grey CH to 8'
7	CH	7-9	15	ST	1B	-	-	Light brown Clays SAND (F-C)
9	SC	9-10	12	SS 3-3	1B	-	-	SAND (F-C), Grey, silty
10	SM	10-11	12	SS 3-3	1B	-	-	
13	SM	13-15	16	SS 3-10-6	1B	-	-	SAA, Silty, Clays

common to 3"

Weather: ~35°C. Bands of Rain Windy
 Comments: S.A.A. = Same as above

(F-C) = fine to coarse grained

USCS Log Legend:

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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-B27

CLIENT USACE-Galveston District **PROJECT NAME** Alexander Island
PROJECT NUMBER W912HY-13-D-0001-DY06 **PROJECT LOCATION** Alexander Island, Baytown, TX
DATE STARTED 12/6/2013 9:05:00 AM **COMPLETED** 12/6/2013 11:23:00 AM **GROUND ELEVATION** 24.6509 ft **HOLE SIZE** 8.25 inches
DRILLING CONTRACTOR QRI **NORTHING** 13832797 ft **EASTING** 3225918 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 8.30 ft / Elev 16.35 ft
WEATHER bands of rain, mid 30s, windy **24 HOURS AFTER DRILLING** ▽ 7.80 ft / Elev 16.85 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				
	CH	CLAY; light grayish brown/orangish brown/very light gray, moist, medium dense, roots common to 8"	0	ST	15		-			13				50			
	CL	Silty CLAY; yellowish orange, moist, stiff, mixed with gray and light gray silty sand (fine to coarse grained) clay color light gray	5	NR	0												
						SS	12	3-3-5 (8)	1.0			30	48	18	30		
				ST	12		0.5										
	SC	Clayey SAND; fine to coarse grained, very light brown		ST	15		-			18							
	SM	Silty SAND; fine to coarse grained, gray, wet Slightly clayey	10	SS	12	3-3	-			20							
						NR	0										
			15	SS	16	3-10-6 (16)	-			29							

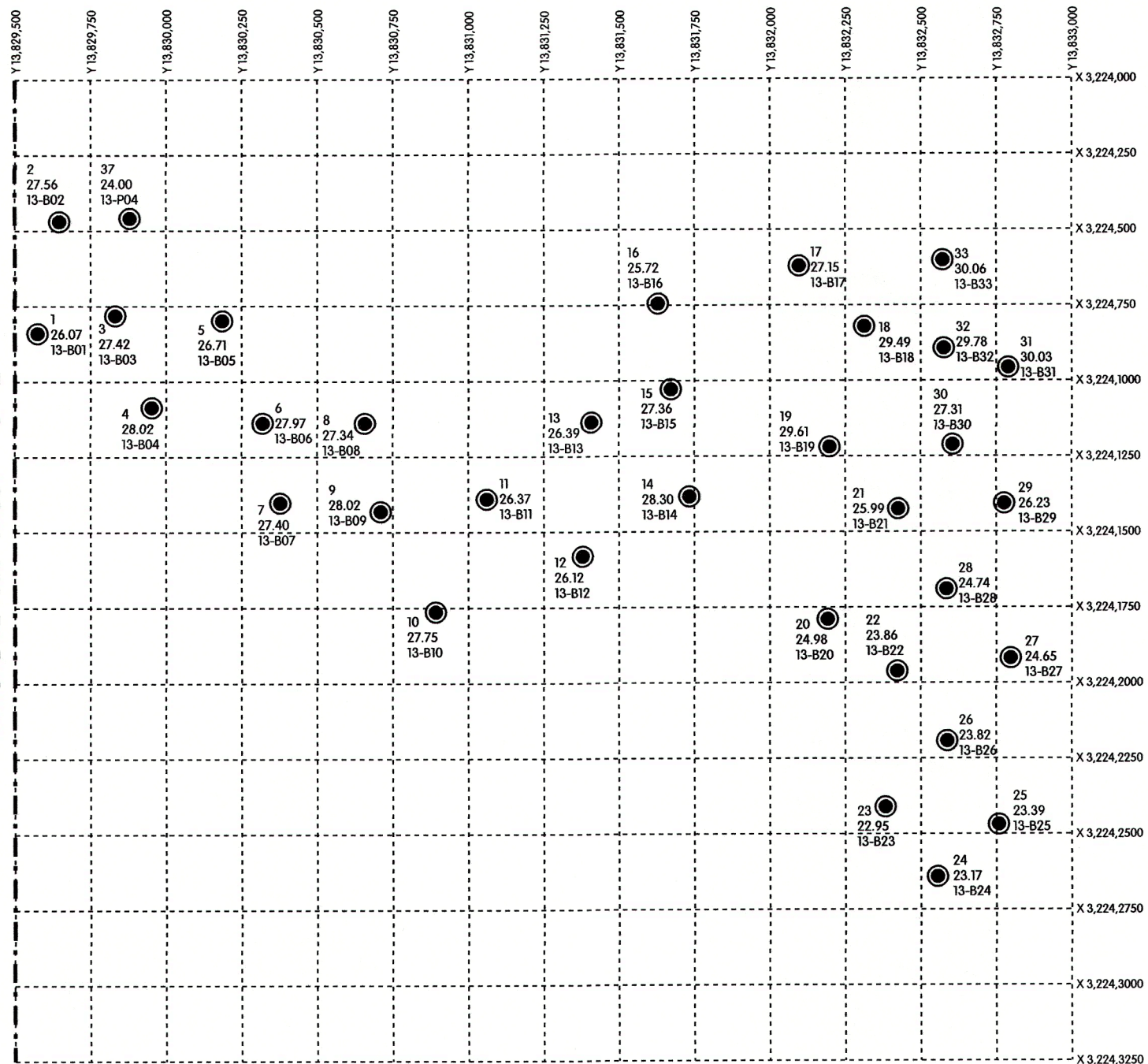
Bottom of borehole at 15.0 feet.

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.

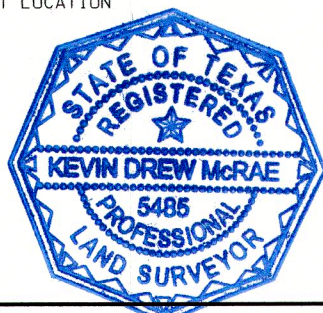
3. SMARTNET ADJUSTED STATION COORDINATES ARE TIED TO NAD83 (NA2011) DATUM AS DEFINED BY THE NGS CORS DATASHEETS OF THOSE STATIONS HELD FIXED IN THE ADJUSTMENT. FULLY CONSTRAINED ADJUSTED COORDINATES ARE REPORTED TO BE ACCURATE TO ABOUT +/-0.5 CM IN HORIZONTAL AND +/- 1.5 CM IN VERTICAL AT 95% CONFIDENCE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



DATE: 7/18/2014

Rev.	Description	Date	By

Drawn by:	X	DATE:	X
Checked by:	X	Scale:	X
Submitted by:	X	Approval Recommended:	X
Approved by:	X	Chief, Engineering Branch:	X
		Chief, Construction Division:	X

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. W912HY-13-D-0001
 ALEXANDER ISLAND PLACEMENT AREA
 PASADENA, TEXAS
 HARRIS COUNTY, TEXAS

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

DRAWN BY: CTC CHECKED BY: KDM

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

FILED

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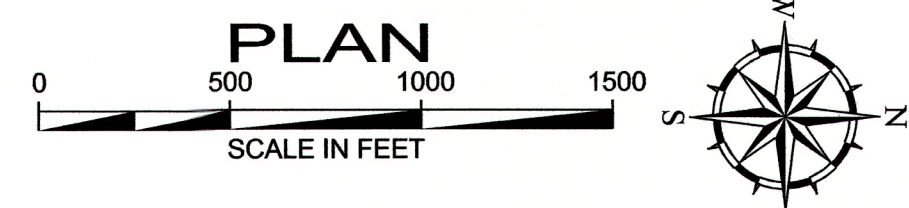
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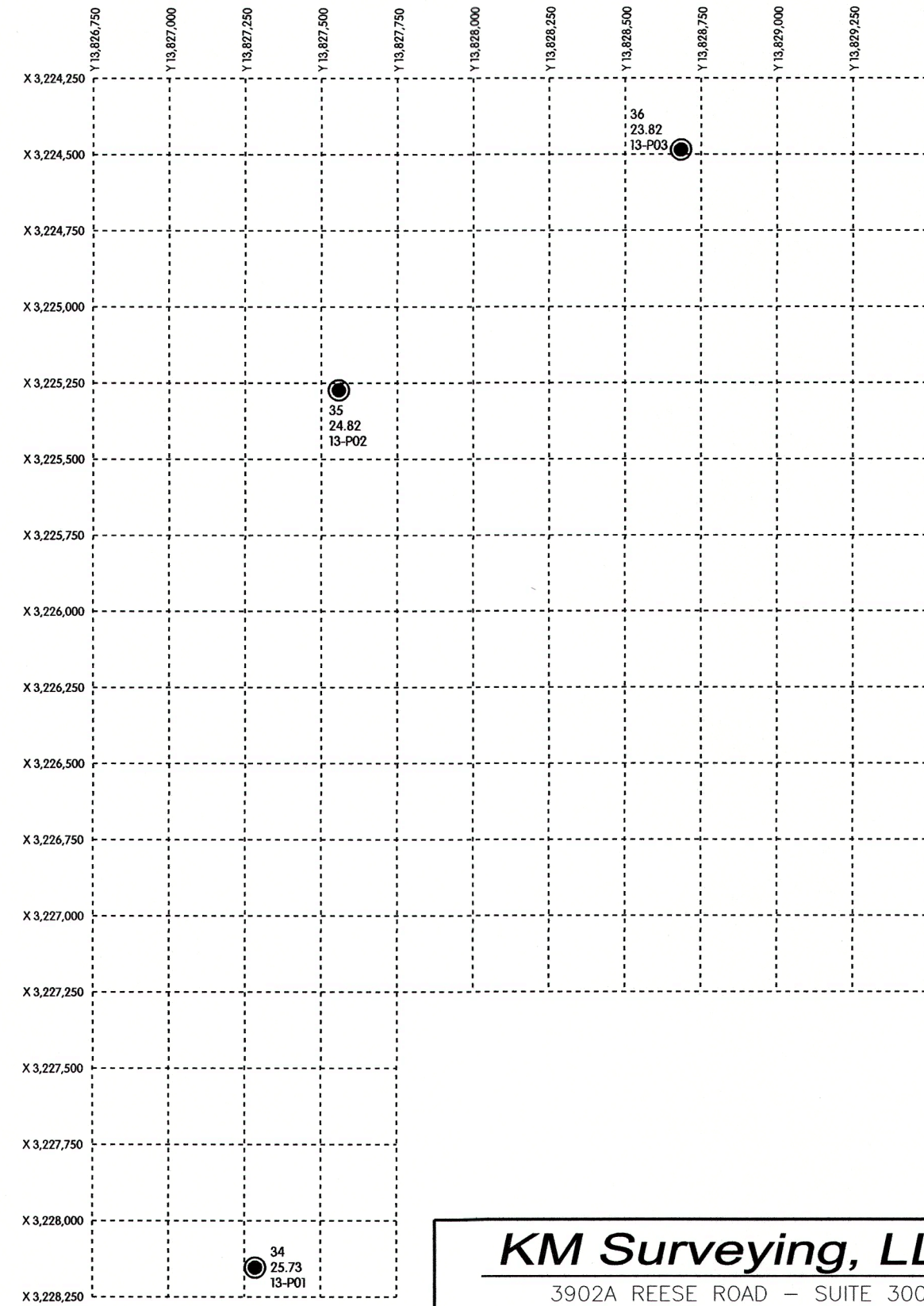
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Kevin Drew McRae
 KEVIN DREW McRAE
 REGISTERED PROFESSIONAL LAND SURVEYOR
 TEXAS REGISTRATION NO. 5485



Rev.	Date	Description



MATCHLINE SEE SHEET 1 OF 2

DATE: 11/18/2014 BY: \$USER\$ TIME: 2:56:39 PM

U.S. ARMY ENGINEER DISTRICT GALVESTON
 CORPS OF ENGINEERS
 GALVESTON, TEXAS

PREPARED UNDER THE DIRECTION OF
 CHRISTOPHER W. SALLESE, Col., C.E.,
 DISTRICT COMMANDER

Drawn by: X	Date: X	Rev: X
Checked by: X	Scale: AS SHOWN	
Submitted by: X	Approved/Recommended:	
DAVID B. PROVIN, P.E., <small>Professional Engineer, Civil Engineering Branch</small>		
Approved by: PETE G. PEREZ, P.E., <small>Chief of Staff, Engineering and Construction Division</small>		

BORING HOLE LOCATIONS
 TASK ORDER NO. D706
 CONTRACT NO. W9127HY-13-D-0001
 ALEXANDER ISLAND PLACEMENT AREA
 PASADENA, TEXAS
 HARRIS COUNTY, TEXAS

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

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

DRAWN BY: CTC CHECKED BY: KDM