



# Environmental Resources Management

Boring/Well No.: MW-1A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788995.08, 3302638.01

Surface Elev.: NM Boring T.D.: 48 ft. Boring Dia.: 2.25 inch

Date Started: 1/7/2020 Date Completed: 1/7/2020 Well Dia./Materials: 1 inch PVC

Drilling Company: Walker-Hill Environmental Driller: Dillan Barnes and Taylor Carter

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

Logged by: David Sanguinetti Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION		
0			3.0/4.0	NA	0-4	0.0-0.2': clayey SILT: with organics 0.2-1.2': CLAY: dark grayish brown (10YR, 4/2), stiff 1.2-1.9': silty CLAY: grayish brown (10YR, 5/2), stiff 1.9-3.0': silty CLAY: moist, high plasticity, iron stained mottling throughout 3.0-4.0': No recovery		
5			2.7/4.0	NA	4-8	4.0-6.4': silty CLAY: increasing silt, moist, high plasticity, iron stained mottling throughout 6.4-6.7': clayey SILT: gray (GLEY, 5/N), no odor, moist 6.7-8.0': No recovery		
10			3.7/4.0	NA	8-12	8.0-9.6': clayey SILT: gray (GLEY, 5/N), no odor, moist 9.6-10.5': sandy SILT: gray, wet 10.5-11.5': clayey SILT: with some sand, wet 11.5-11.7': SAND: dark gray, wet 11.7-12.0': No recovery		
15			3.7/4.0	NA	12-16	12.0-15.7': SAND: dark gray, wet 15.7-16.0': No recovery		
20			3.8/4.0	NA	16-20	16.0-18.4': SAND: dark gray, wet 18.4-19.2': clayey SILT: dark gray, wet 19.2-19.8': SAND: gray (GLEY, 5/N), compact, wet 19.8-20.0': No recovery		
25			3.8/4.0	NA	20-24	20.0-22.1': silty SAND: gray (GLEY, 5/N), wet 22.1-23.0': silty CLAY: gray (GLEY, 5/N), moist 23.0-23.8': silty SAND: gray (GLEY, 5/N), dense, wet 23.8-24.0': No recovery		
30			3.9/4.0	NA	24-28	24.0-26.5': SAND: gray, dense, wet 26.5-27.0': silty CLAY: gray (GLEY, 5/N) 27.0-27.7': SAND: with silt, gray (GLEY, 5/N), moist, small shells 27.7-27.9': silty CLAY: gray, not stiff, low plasticity 27.9-28.0': No recovery		
			1.9/4.0	NA	28-30	28.0-29.9': SAND: gray (GLEY, 5/N), loose, wet 29.9-30.0': No recovery		



Project No.: 0494255 Date Drilled: 1/7/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			1.9/4.0	NA	30-32	30.0-32.0': No recovery
35			3.2/4.0	NA	32-36	32.0-34.9': SAND: gray (GLE Y, 5/N), loose, wet 34.9-35.2': silty CLAY: gray (GLE Y, 5/N), low plasticity, moist 35.2-36.0': No recovery
40			3.8/4.0	NA	36-40	36.0-37.5': alternating clayey SILT and silty CLAY: gray (GLE Y, 5/N), wet 37.5-37.9': sandy SILT: gray, wet 37.9-38.0': PEAT: dark brown 38.0-39.8': SAND: gray (GLE Y, 5/N), compact, moist 39.8-40.0': No recovery
45			3.6/4.0	NA	40-44	40.0-40.4': SAND: gray (GLE Y, 5/N), moist 40.4-40.7': PEAT: dark brown 40.7-42.3': sandy SILT: gray (GLE Y, 5/N), wet 42.3-42.4': CLAY: gray (GLE Y, 5/N), wet 42.4-43.0': sandy SILT: gray (GLE Y, 5/N), wet 43.0-43.1': CLAY: gray (N5)
50			3.3/4.0	NA	44-48	43.1-43.6': sandy SILT: gray (GLE Y, 5/N), wet 43.6-44.0': No recovery
55						44.0-44.7': sandy SILT: dark gray (GLE Y, 4/N), wet 44.7-47.3': silty CLAY: gray (N4), decreasing silt, stiff, high plasticity, moist 47.3-48.0': No recovery
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# Environmental Resources Management

Boring/Well No.: MW-1B

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788995.08, 3302638.01

Surface Elev.: NM Boring T.D.: 48 ft. Boring Dia.: 2.25 inch

Date Started: 1/7/2020 Date Completed: 1/7/2020 Well Dia./Materials: 1 inch PVC

Drilling Company: Walker-Hill Environmental Driller: Dillan Barnes and Taylor Carter

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

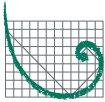
Logged by: David Sanguinetti Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.0/4.0	NA	0-4	0.0-0.2': clayey SILT: with organics 0.2-1.2': CLAY: dark grayish brown (10YR, 4/2), stiff 1.2-1.9': silty CLAY: grayish brown (10YR, 5/2), stiff 1.9-3.0': silty CLAY: moist, high plasticity, iron stained mottling throughout 3.0-4.0': No recovery
5			2.7/4.0	NA	4-8	4.0-6.4': silty CLAY: increasing silt, moist, high plasticity, iron stained mottling throughout 6.4-6.7': clayey SILT: gray (GLEY, 5/N), no odor, moist 6.7-8.0': No recovery
10			3.7/4.0	NA	8-12	8.0-9.6': clayey SILT: gray (GLEY, 5/N), no odor, moist 9.6-10.5': sandy SILT: gray, wet 10.5-11.5': clayey SILT: with some sand, wet 11.5-11.7': SAND: dark gray, wet 11.7-12.0': No recovery
15			3.7/4.0	NA	12-16	12.0-15.7': SAND: dark gray, wet 15.7-16.0': No recovery
20			3.8/4.0	NA	16-20	16.0-18.4': SAND: dark gray, wet 18.4-19.2': clayey SILT: dark gray, wet 19.2-19.8': SAND: gray (GLEY, 5/N), compact, wet 19.8-20.0': No recovery
25			3.8/4.0	NA	20-24	20.0-22.1': silty SAND: gray (GLEY, 5/N), wet 22.1-23.0': silty CLAY: gray (GLEY, 5/N), moist 23.0-23.8': silty SAND: gray (GLEY, 5/N), dense, wet 23.8-24.0': No recovery
28			3.9/4.0	NA	24-28	24.0-26.5': SAND: gray, dense, wet 26.5-27.0': silty CLAY: gray (GLEY, 5/N) 27.0-27.7': SAND: with silt, gray (GLEY, 5/N), moist, small shells 27.7-27.9': silty CLAY: gray, not stiff, low plasticity 27.9-28.0': No recovery
30			1.9/4.0	NA	28-30	28.0-29.9': SAND: gray (GLEY, 5/N), loose, wet 29.9-30.0': No recovery



Project No.: 0494255 Date Drilled: 1/7/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			1.9/4.0	NA	30-32	30.0-32.0': No recovery
35			3.2/4.0	NA	32-36	32.0-34.9': SAND: gray (GLEY, 5/N), loose, wet 34.9-35.2': silty CLAY: gray (GLEY, 5/N), low plasticity, moist 35.2-36.0': No recovery
40			3.8/4.0	NA	36-40	36.0-37.5': alternating clayey SILT and silty CLAY: gray (GLEY, 5/N), wet 37.5-37.9': sandy SILT: gray, wet 37.9-38.0': PEAT: dark brown 38.0-39.8': SAND: gray (GLEY, 5/N), compact, moist 39.8-40.0': No recovery
45			3.6/4.0	NA	40-44	40.0-40.4': SAND: gray (GLEY, 5/N), moist 40.4-40.7': PEAT: dark brown 40.7-42.3': sandy SILT: gray (GLEY, 5/N), wet 42.3-42.4': CLAY: gray (GLEY, 5/N), wet 42.4-43.0': sandy SILT: gray (GLEY, 5/N), wet
50			3.3/4.0	NA	44-48	43.0-43.1': CLAY: gray (N5) 43.1-43.6': sandy SILT: gray (GLEY, 5/N), wet 43.6-44.0': No recovery 44.0-44.7': sandy SILT: dark gray (GLEY, 4/N), wet 44.7-47.3': silty CLAY: gray (N4), decreasing silt, stiff, high plasticity, moist 47.3-48.0': No recovery
55						
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# ERM Environmental Resources Management

Boring/Well No.: MW-2A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789256, 3302713

Surface Elev.: NM Boring T.D.: 48 ft. Boring Dia.: 2.25" Soil, 3.25" Well

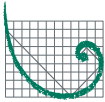
Date Started: 7/15/2020 Date Completed: 7/15/2020 Well Dia./Materials: 1" Pre-pack PVC

Drilling Company: Walker Hill Driller: Jack Womble

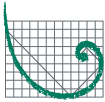
Drilling Method: Direct Push - Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.9/4.0	1.98	NA	0-4	0.0-1.9': CLAY: very dark grayish brown (10YR, 3/2), medium soft to stiff, moist, no odor, little silt content, Fe/Mn staining, some silt at top, rootlets at top, little shells/shell fragments at top
				2.34	NA		1.9-4.0': No recovery
5			2.4/4.0	2.02	NA	4-8	4.0-6.4': CLAY: dark grayish brown (10YR, 4/2) at top to very dark gray (5Y, 3/1), medium soft to stiff, moist, no odor, some Fe staining, very little silt content
				3.99	NA		6.4-8.0': No recovery
10			3.5/4.0	4.11	NA	8-12	8.0-11.5': CLAY: dark gray (5Y, 4/1) to very dark gray (5Y, 3/1), medium soft, moist, no odor, some organic material, very little silt content
				6.93	NA		11.5-12.0': No recovery
15			2.8/4.0	7.94	NA	12-16	12.0-13.8': CLAY: very dark gray (5Y, 3/1), stiff to medium soft, moist, no odor, very little silt content
				5.87	NA		13.8-14.8': clayey SILT: dark gray (5Y, 4/1), medium soft, slightly wet to wet, no odor
20			2.7/4.0	4.27	NA	16-20	14.8-16.0': No recovery
				5.62	NA		16.0-17.9': SILT to clayey SILT: dark gray (5Y, 4/1), medium soft, wet, no odor
25			1.9/4.0	4.27	NA	20-24	17.9-18.7': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor, little shell fragments
				4.22	NA		18.7-20.0': No recovery
30			1.5/4.0	3.08	NA	24-28	20.0-21.9': CLAY: very dark gray (5Y, 3/1), medium soft, moist, no odor, little shell fragments
				1.87	NA		21.9-24.0': No recovery
			3.1/4.0	1.81	NA	28-30	24.0-24.4': CLAY: very dark gray (5Y, 3/1), medium soft, moist, no odor
							24.4-25.5': clayey SILT: very dark gray (5Y, 3/1), medium soft, wet, no odor, little silt at bottom
							25.5-28.0': No recovery
							28.0-30.0': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor



DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.1/4.0	1.31	NA	30-32	(Cont. from page 1) 30.0-31.1': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 31.1-32.0': No recovery
			3.6/4.0	0.46	NA	32-36	32.0-33.0': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 33.0-34.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor 34.0-35.6': Silty SAND: fine grained, medium dense, wet, no odor 35.6-36.0': No recovery
35				0.58	NA		
			3.3/4.0	1.48	NA	36-40	36.0-39.3': SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 39.3-40.0': No recovery
				1.02	NA		
40			0.0/4.0	NA	NA	40-44	40.0-44.0': No recovery
				NA	NA		
45			0.9/4.0	3.39	NA	44-48	44.0-44.9': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, some silt content 44.9-48.0': No recovery
				3.91	NA		
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# ERM Environmental Resources Management

Boring/Well No.: MW-2B

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789256, 3302713

Surface Elev.: NM Boring T.D.: 48 ft. Boring Dia.: 2.25" Soil, 3.25" Well

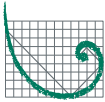
Date Started: 7/15/2020 Date Completed: 7/15/2020 Well Dia./Materials: 1" Pre-pack PVC

Drilling Company: Walker Hill Driller: Jack Womble

Drilling Method: Direct Push - Geoprobe 7822DT Grouting Method: Portland/Bentonite

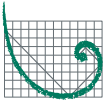
Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.9/4.0	1.98	NA	0-4	0.0-1.9': CLAY: very dark grayish brown (10YR, 3/2), medium soft to stiff, moist, no odor, little silt content, Fe/Mn staining, some silt at top, rootlets at top, little shells/shell fragments at top 1.9-4.0': No recovery
				2.34	NA		
5			2.4/4.0	2.02	NA	4-8	4.0-6.4': CLAY: dark grayish brown (10YR, 4/2) at top to very dark gray (5Y, 3/1), medium soft to stiff, moist, no odor, some Fe staining, very little silt content 6.4-8.0': No recovery
				3.99	NA		
10			3.5/4.0	4.11	NA	8-12	8.0-11.5': CLAY: dark gray (5Y, 4/1) to very dark gray (5Y, 3/1), medium soft, moist, no odor, some organic material, very little silt content 11.5-12.0': No recovery
				6.93	NA		
15			2.8/4.0	7.94	NA	12-16	12.0-13.8': CLAY: very dark gray (5Y, 3/1), stiff to medium soft, moist, no odor, very little silt content 13.8-14.8': clayey SILT: dark gray (5Y, 4/1), medium soft, slightly wet to wet, no odor 14.8-16.0': No recovery
				5.87	NA		
20			2.7/4.0	4.27	NA	16-20	16.0-17.9': SILT to clayey SILT: dark gray (5Y, 4/1), medium soft, wet, no odor 17.9-18.7': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor, little shell fragments 18.7-20.0': No recovery
				5.62	NA		
25			1.9/4.0	5.19	NA	20-24	20.0-21.9': CLAY: very dark gray (5Y, 3/1), medium soft, moist, no odor, little shell fragments 21.9-24.0': No recovery
				4.22	NA		
30	3.1/4.0	3.08	NA	24-28	24.0-24.4': CLAY: very dark gray (5Y, 3/1), medium soft, moist, no odor 24.4-25.5': clayey SILT: very dark gray (5Y, 3/1), medium soft, wet, no odor, little silt at bottom 25.5-28.0': No recovery		
		1.87	NA				
		1.81	NA	28-30	28.0-30.0': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor		



DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30							(Cont. from page 1)
			3.1/4.0	1.31	NA	30-32	30.0-31.1': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 31.1-32.0': No recovery
			3.6/4.0	0.46	NA	32-36	32.0-33.0': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 33.0-34.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor 34.0-35.6': Silty SAND: fine grained, medium dense, wet, no odor 35.6-36.0': No recovery
				0.58	NA		
			3.3/4.0	1.48	NA	36-40	36.0-39.3': SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 39.3-40.0': No recovery
				1.02	NA		
			0.0/4.0	NA	NA	40-44	40.0-44.0': No recovery
				NA	NA		
			0.9/4.0	3.39	NA	44-48	44.0-44.9': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, some silt content 44.9-48.0': No recovery
				3.91	NA		
50							
55							
60							
65							





# ERM Environmental Resources Management

Boring/Well No.: MW-3A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789149 3301776

Surface Elev.: NM Boring T.D.: 20 ft. Boring Dia.: 2.25" Soil, 3.25" Well

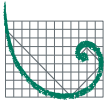
Date Started: 7/6/2020 Date Completed: 7/6/2020 Well Dia./Materials: 1" Pre-pack PVC

Drilling Company: Walker Hill Driller: Jack Womble

Drilling Method: Direct Push - Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	0.09	NA	0-4	0.0-1.3': SAND: fill, with limestone 1.3-2.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, little silt content 2.0-4.0': No recovery
				0.33	NA		
5			2.5/4.0	0.57	NA	4-8	4.0-6.5': CLAY: dark gray (5Y, 4/1) to gray (5Y, 5/1), medium soft to stiff, moist, no odor, little Fe staining, little silt content 6.5-8.0': No recovery
				0.62	NA		
10			3.6/4.0	0.46	NA	8-12	8.0-11.0': CLAY: dark gray (5Y, 4/1), stiff to medium soft, moist, no odor, clayey wet silt lens at 2.0-2.4' 11.0-11.6': clayey SILT: dark gray (5Y, 4/1), soft, wet, no odor 11.6-12.0': No recovery
				0.28	NA		
15			4.0/4.0	0.30	NA	12-16	12.0-16.0': SILT: dark gray (5Y, 4/1), soft, wet to saturated, no odor, little clay content at bottom
				0.28	NA		
20			4.0/4.0	NA	NA	16-20	16.0-17.0': SILT: dark gray (5Y, 4/1), soft, saturated, no odor, little clay at bottom 17.0-20.0': CLAY: dark gray (5Y, 4/1), stiff to medium soft, moist, no odor, little silt content, few shell fragments
				NA	NA		
25							
30							



# ERM Environmental Resources Management

Boring/Well No.: MW-4A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788884, 3301916

Surface Elev.: NM Boring T.D.: 20 ft. Boring Dia.: 2.25" Soil, 3.25" Well

Date Started: 7/7/2020 Date Completed: 7/7/2020 Well Dia./Materials: 1" Pre-pack PVC

Drilling Company: Walker Hill Driller: Jack Womble

Drilling Method: Direct Push - Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.1/4.0	0.36	NA	0-4	0.0-0.3': clayey SILT: dark gray (5Y, 4/1), very soft, wet, no odor 0.3-1.1': CLAY: dark grayish brown (10YR, 4/2), medium soft to stiff, moist, no odor, little Fe/Mn staining 1.1-4.0': No recovery
				0.35	NA		
5			2.0/4.0	0.52	NA	4-8	4.0-6.0': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor, some Fe/Mn, very little silt content 6.0-8.0': No recovery
				0.54	NA		
10			3.3/4.0	2.55	NA	8-12	8.0-11.3': SILT: dark gray (5Y, 4/1), firm to medium soft, wet, no odor, some clayey silt lenses, very little clay content 11.3-12.0': No recovery
				5.45	NA		
15			4.0/4.0	5.84	NA	12-16	12.0-14.0': SILT: dark gray (5Y, 4/1), soft, saturated, no odor, very little clay content 14.0-15.0': clayey SILT: dark gray (5Y, 4/1), firm, wet, no odor 15.0-16.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor
				7.50	NA		
20			3.2/4.0	7.21	NA	16-20	16.0-19.2': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, shell pieces and fragments at 17.5-18.7' 19.2-20.0': No recovery
				6.20	NA		
25							
30							



# Environmental Resources Management

Boring/Well No.: MW-5A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM15R 788685.42, 3301894.33

Surface Elev.: NM Boring T.D.: 20 ft. Boring Dia.: 2.25 inch

Date Started: 1/16/2020 Date Completed: 1/16/2020 Well Dia./Materials: 1 inch PVC

Drilling Company: Walker-Hill Environmental Driller: Dillan Barnes and Taylor Carter

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

Logged by: David Sanguinetti Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.9/4.0	NA	0-4	0.0-0.2': silty CLAY: stiff, high plasticity, moist 0.2-0.4': silty CLAY: topsoil, brown 0.4-1.9': CLAY: brown with gray mottling, stiff, no odor, dry 1.9-4.0': No recovery
5			3.5/4.0	NA	4-8	4.0-4.9': silty SAND: gray, dense, no odor, wet 4.9-5.9': clayey SILT: brownish gray, soft, moist 5.9-6.2': silty CLAY: brownish gray, stiff, moist 6.2-6.9': SAND: brown, medium dense, wet 6.9-7.5': clayey SAND: gray, stiff, no odor, wet 7.5-8.0': No recovery
10			3.7/4.0	NA	8-12	8.0-8.7': SAND: gray, dense, no odor, wet 8.7-9.6': silty CLAY: gray, light gray lense at 1.5', wet 9.6-11.7': SAND: gray, stiff, no odor, moist 11.7-12.0': No recovery
15			3.2/4.0	NA	12-16	12.0-14.1': SAND: gray, dense, no odor, wet 14.1-14.3': clayey SILT: gray, stiff, low plasticity 14.3-15.2': SAND: gray, dense, no odor, wet 15.2-16.0': No recovery
20			3.3/4.0	NA	16-20	16.0-19.3': SAND: gray, dense, no odor, wet 19.3-20.0': No recovery
25						
30						



# Environmental Resources Management

Boring/Well No.: MW-6A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788471.30, 3301681.29

Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 2.25 inch

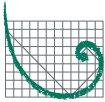
Date Started: 1/16/2020 Date Completed: 1/16/2020 Well Dia./Materials: 1 inch PVC

Drilling Company: Walker-Hill Environmental Driller: Dillan Barnes and Taylor Carter

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

Logged by: David Sanguinetti Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.3/4.0	NA	0-4	0.0-0.2': silty CLAY: topsoil, brown 0.2-2.3': CLAY: light brown, stiff, high plasticity, iron stained mottling throughout, dry 2.3-4.0': No recovery
5			2.5/4.0	NA	4-8	4.0-5.0': CLAY: gray, brown mottling, stiff, iron stained mottling streak, dry 5.0-5.4': silty CLAY: gray-brown, medium stiff, no odor, dry 5.4-6.5': clayey SILT: gray, soft, moist 6.5-8.0': No recovery
10			3.7/4.0	NA	8-12	8.0-8.5': CLAY: grayish brown, stiff, no odor, moist 8.5-10.0': silty CLAY: grayish brown, medium stiff, moist 10.0-10.5': SILT: with some clay, gray, wet 10.5-11.7': silty SAND: gray, dense, no odor, wet 11.7-12.0': No recovery
15			3.8/4.0	NA	12-16	12.0-15.0': silty SAND: gray, dense, no odor 15.0-15.8': clayey SILT: gray, medium dense, silt 15.8-16.0': No recovery
20			3.8/4.0	NA	16-20	16.0-16.5': silty CLAY: gray, stiff, wet 16.5-19.8': clayey SILT: with some sand, gray, low density, no odor, wet 19.8-20.0': No recovery
25			3.8/4.0	NA	20-24	20.0-20.6': clayey SILT: with some sand, gray, low density, no odor, wet 20.6-23.8': silty CLAY: gray, stiff, medium plasticity, moist 23.8-24.0': No recovery
30						



# ERM Environmental Resources Management

Boring/Well No.: DB-7/MW-7A

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788660, 3301441

Surface Elev.: NM Boring T.D.: 92 ft. Boring Dia.: 2.25" Soil, 3.25" Well

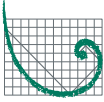
Date Started: 7/13/2020 Date Completed: 7/14/2020 Well Dia./Materials: 1" Pre-pack PVC

Drilling Company: Walker Hill Driller: Jack Womble

Drilling Method: Direct Push - Geoprobe 7822DT Grouting Method: Portland/Bentonite

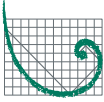
Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.2/4.0	1.18	NA	0-4	0.0-2.2': CLAY: grayish brown (2.5Y, 4/2), medium soft, moist, no odor, Fe/Mn staining, few concretions, some organic material at top, very little silt content 2.2-4.0': No recovery
				1.76	NA		
5			1.5/4.0	0.87	NA	4-8	4.0-4.4': CLAY: dark grayish brown (2.5Y, 4/2), medium soft, moist, no odor, some Fe staining, very little silt content 4.4-5.2': clayey SILT: dark grayish brown (2.5Y, 4/2), medium soft, slightly wet to wet, no odor, some Fe staining 5.2-5.5': SILT: dark grayish brown (2.5Y, 4/2), firm, wet, no odor, Fe staining 5.5-8.0': No recovery
				0.94	NA		
10			1.4/4.0	0.83	NA	8-12	8.0-9.4': SILT: dark grayish brown (2.5Y, 4/2) to dark gray (5Y, 4/1), firm, wet, no odor, very little Fe staining at top 9.4-12.0': No recovery
				1.73	NA		
15			2.7/4.0	2.29	NA	12-16	12.0-14.7': SILT: dark gray (5Y, 4/1), firm, wet, no odor, little clay content increasing at bottom, clay lens at 12.9' and 14.2-14.3' bgs 14.7-16.0': No recovery
				4.98	NA		
20			2.8/4.0	5.76	NA	16-20	16.0-18.8': CLAY: dark gray (5Y, 4/1) to dark gray (GLEYS, 4/N), medium soft, moist, no odor, some silt content 16.0-16.9' bgs, very little silt content 16.9' to bottom, little shell fragments 17.0' to bottom 18.8-20.0': No recovery
				6.94	NA		
25			2.8/4.0	2.46	NA	20-24	20.0-20.6': clayey SILT: dark gray (5Y, 4/1), soft, wet, no odor, shell fragments 20.6-22.6': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, little silt content, shell fragments, piece of shell 22.6-22.8': SILT: dark gray (5Y, 4/1), firm, slightly wet, no odor, little clay content 22.8-24.0': No recovery
				5.64	NA		
30			3.4/4.0	5.98	NA	24-28	24.0-27.4': SILT: dark gray (5Y, 4/1), firm, wet to saturated, no odor, organic material, organic layering at 26.6-26.7' bgs and 27' bgs, little clay content and trace fine grained sand at bottom 27.4-28.0': No recovery
				7.02	NA		
			3.4/4.0	5.75	NA	28-30	28.0-29.2': SILT: dark gray (5Y, 4/1), firm, wet, no odor, few clay lenses 29.2-30.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, few silt lenses at 29.3', 29.9', 30.4' bgs



Project No.: 0494255 Date Drilled: 7/13/2020 - 7/14/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.4/4.0	6.42	NA	30-32	(Cont. from page 1) 30.0-30.9': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, few silt lenses at 29.3', 29.9', 30.4' 30.9-31.4': SILT: dark gray (5Y, 4/1), firm, slightly wet, no odor, little clay content at bottom 31.4-32.0': No recovery
35			2.7/4.0	7.17	NA	32-36	32.0-32.4': SILT: dark gray (5Y, 4/1), firm, wet, no odor 32.4-33.5': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor 33.5-34.7': SILT: dark gray (5Y, 4/1), firm, wet, no odor 34.7-36.0': No recovery
				7.32	NA		
40			2.3/4.0	8.32	NA	36-40	36.0-38.4': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor, some silt content at top decreasing with depth, silt lens with organics at 37.4-37.6' bgs, few silt lenses at top to 35.4' bgs 38.4-40.0': No recovery
				8.96	NA		
45			3.8/4.0	8.66	NA	40-44	40.0-41.6': SILT: dark gray (5Y, 4/1), firm, saturated, no odor, clay lens and organics at bottom 41.6-43.8': silty SAND: fine grained, very dark gray (5Y, 3/1), medium dense, saturated, no odor, organics 43.8-44.0': No recovery
				6.96	NA		
50			3.6/4.0	4.85	NA	44-48	44.0-47.5': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, saturated, no odor, little clay at top 47.5-47.6': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor 47.6-48.0': No recovery
				5.61	NA		
55			3.5/4.0	0.33	NA	48-52	48.0-51.5': SILT: dark gray (5Y, 4/1), some sand content, loose, saturated, no odor 51.5-52.0': No recovery
				0.30	NA		
60			3.4/4.0	6.05	NA	52-56	52.0-55.4': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, little silt content at top, few silt lenses decreasing with depth 55.4-56.0': No recovery
				5.51	NA		
65			2.6/4.0	6.06	NA	56-60	56.0-58.4': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor, couple silt lenses at 57.7' and 58.4' bgs 58.4-60.0': No recovery
		7.70	NA				
	3.0/4.0	4.76	NA	60-64	60.0-63.0': CLAY: dark gray (5Y, 4/1), medium soft to stiff, moist, no odor 63.0-64.0': No recovery		
		6.45	NA				
	3.6/4.0	6.66	NA	64-66	64.0-66.0': CLAY: dark gray (GLEYS, 14/N), medium soft to stiff, moist, no odor		



Project No.: 0494255 Date Drilled: 7/13/2020 - 7/14/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
							(Cont. from page 2)
			3.6/4.0	7.02	NA	66-68	66.0-67.6': CLAY: dark gray (GLE Y1, 4/N), medium soft to stiff, moist, no odor 67.6-68.0': No recovery
70			3.1/4.0	9.58	NA	68-72	68.0-71.1': CLAY: dark gray (GLE Y1, 4/N), medium soft, moist, no odor 71.1-72.0': No recovery
				9.47	NA		
75			3.7/4.0	9.47	NA	72-76	72.0-75.7': CLAY: dark gray (GLE Y1, 4/N), medium soft to stiff, moist, no odor 75.7-76.0': No recovery
				10.57	NA		
			3.7/4.0	8.05	NA	76-80	76.0-78.2': clayey SILT: dark gray (GLE Y1, 4/N), soft, wet, no odor, abundant shell fragments 78.2-79.7': CLAY: dark gray (GLE Y1, 4/N), medium soft, moist, no odor, some shell fragments, 78.8-78.9' has clayey silt with shell fragments 79.7-80.0': No recovery
80				9.87	NA		
			3.4/4.0	9.85	NA	80-84	80.0-82.2': CLAY: dark greenish gray (GLE Y1, 4/10GY), medium soft to stiff, moist, no odor, very little silt content increasing at bottom, few shell fragments at bottom 82.2-83.4': clayey SILT: dark greenish gray (GLE Y1, 4/10GY), loose, wet, no odor, some shell fragments, little sand content increasing at bottom 83.4-84.0': No recovery
				9.89	NA		
85			0.0/4.0	NA	NA	84-88	84.0-88.0': No recovery: clayey silt in geoprobe sampling shoe
				NA	NA		
90			2.6/4.0	9.41	NA	88-92	88.0-90.6': silty SAND: greenish gray (GLE Y1, 5/10GY), loose to medium dense, wet, no odor 90.6-92.0': No recovery
				5.33	NA		
95							
100							



# Environmental Resources Management

Boring/Well No.: DB-1/MW-8B

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM15R 789094.82, 3302783.73

Surface Elev.: NM Boring T.D.: 88 ft. Boring Dia.: 2.25 inch

Borehole Drilled: 12/19/2019 Well Installed: 1/8/2020 Well Dia./Materials: 1 inch PVC

Drilling Company: Walker-Hill Environmental Driller: Jack Womble

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0						
0-4			1.0/4.0	1.21	0-4	0.0-1.0': CLAY: dark grayish brown (10YR, 4/2), medium soft, no odor, little iron staining, moist 1.0-4.0': No recovery
4-8			1.3/4.0	1.07	4-8	4.0-5.3': CLAY to clayey SILT: dark grayish brown (2.5Y, 4/2), medium soft to soft, little iron staining, moist to slightly wet/wet in spots 5.3-8.0': No recovery
8-12			1.3/4.0	4.59	8-12	8.0-9.3': CLAY to clayey SILT: some silt on bottom, dark gray (5Y, 4/1), medium soft to soft, no odor, moist to slightly wet/wet 9.3-12.0': No recovery
12-16			2.1/4.0	4.26	12-16	12.0-14.1': CLAY to clayey SILT: increasing silt with depth, dark gray (5Y, 4/1), medium soft to soft, moist to slightly wet/wet, no odor 14.1-16.0': No recovery
14.1-16.0				2.41		
16-20			3.3/4.0	1.61	16-20	16.0-19.3': SILT: some fine grain sand, dark gray (5Y, 4/1), firm, no odor, wet 19.3-20.0': No recovery
19.3-20.0				0.92		
20-24			3.9/4.0	1.56	20-24	20.0-23.9': SILT: little fine grained sand increasing at bottom, small clay lens at 23.5', little organic material, dark gray (5Y, 4/1), firm, no odor, wet 23.9-24.0': No recovery
23.9-24.0				0.87		
24-28			3.3/4.0	0.77	24-28	24.0-27.0': silty SAND: fine grained, dark gray (5Y, 4/1), firm, no odor, wet 27.0-27.3': CLAY: dark gray (5Y, 4/1), medium soft, no odor, moist 27.3-28.0': No recovery
27.0-27.3				2.54		
27.3-28.0						
28-30			3.4/4.0	1.35	28-30	28.0-30.0': silty SAND: fine grained, dark gray (5Y, 4/1), firm, no odor, organic material/wood at top, wet





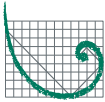
Project No.: 0494255 Date Drilled: 1/8/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.4/4.0	0.71	30-32	30.0-31.4': silty SAND: fine grained, dark gray (5Y, 4/1), firm, no odor, organic material/wood at top, wet 31.4-32.0': No recovery
35			3.7/4.0	2.60	32-36	32.0-35.7': silty SAND: fine grained, dark gray (5Y, 4/1), firm, no odor, organic material/small carbonized wood pieces, wet 35.7-36.0': No recovery
				3.51		
40			3.6/4.0	4.46	36-40	36.0-39.6': sandy SILT: dark gray (5Y, 4/1), firm, no odor, some organic material, wood layer at 38.0', clay with silt lens at 36.9-37.0' and 39.0-39.2', some clayey silt at bottom, wet 39.6-40.0': No recovery
				4.70		
45			3.6/4.0	5.48	40-44	40.0-41.0': clayey SILT: dark gray (5Y, 4/1), soft, no odor, clay lens at bottom, wet 41.0-42.0': SILT: dark gray (5Y, 4/1), soft, no odor 42.0-43.6': clayey SILT: dark gray (5Y, 4/1), medium soft, no odor, clay lens at 42.7-43.0', increasing clay content with depth, moist to slightly wet 43.6-44.0': No recovery
				5.56		
50			3.6/4.0	4.46	44-48	44.0-44.4': clayey SILT: dark gray (5Y, 4/1), medium soft, no odor, moist 44.4-47.6': SILT: little clay content at 47.0-47.6', dark gray (5Y, 4/1), soft, no odor, clayey silt lens at 45.6', small wood fragments, moist 47.6-48.0': No recovery
				5.51		
55			3.5/4.0	6.67	48-52	48.0-51.0': SILT: dark gray (5Y, 4/1), very soft, no odor, saturated 51.0-51.5': CLAY: little silt, dark gray (5Y, 4/1), medium soft, no odor, moist 51.5-52.0': No recovery
				4.94		
60			3.7/4.0	4.42	52-56	52.0-52.7': CLAY: very little silt, dark gray (5Y, 4/1), medium soft, no odor, moist 52.7-53.5': SILT: dark gray (5Y, 4/1), soft, no odor, saturated 53.5-55.0': clayey SILT: dark gray (5Y, 4/1), medium soft, clay lens at 54.4-54.6', moist 55.0-55.7': CLAY: very little silt, dark gray (5Y, 4/1), medium soft, no odor, moist 55.7-56.0': No recovery
				6.85		
65			3.8/4.0	6.69	56-60	56.0-59.8': CLAY: dark gray (5Y, 4/1), medium soft to stiff, no odor, moist 59.8-60.0': No recovery
				6.30		
			3.6/4.0	6.21	60-64	60.0-63.6': CLAY: dark gray (5Y, 4/1), medium soft to stiff, no odor, moist 63.6-64.0': No recovery
				6.15		
			3.5/4.0	6.04	64-65	64.0-65.0': CLAY: dark gray (5Y, 4/1), medium soft to stiff, no odor, moist



Project No.: 0494255 Date Drilled: 1/8/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
65			3.5/4.0	6.25	65-68	65.0-67.5': CLAY: dark gray (GLE Y1, 4/N), medium soft to stiff, no odor, moist 67.5-68.0': No recovery	
70			3.6/4.0	5.25 5.38	68-72	68.0-71.6': CLAY: dark gray (GLE Y1, 4/N), medium soft to stiff, no odor, moist 71.6-72.0': No recovery	
75			3.6/4.0	4.26 4.24	72-76	72.0-75.6': CLAY: dark gray (GLE Y1, 4/N), medium soft to stiff, no odor, very small silt lenses at 74.3', 74.5', 74.7', and 75.1', moist 75.6-76.0': No recovery	
80			3.6/4.0	3.66 3.34	76-80	76.0-79.6': CLAY: dark gray (GLE Y1, 4/N), medium soft, no odor, little silt contained very small shell fragments, very small whole shells, little clayey silt and silt lenses, moist 79.6-80.0': No recovery	
85			3.5/4.0	3.07 1.61	80-84	80.0-80.9': clayey SILT: dark greenish gray (GLE Y1, 4/10Y), soft, no odor, wet 80.9-81.5': CLAY: dark greenish gray (GLE Y1, 4/56Y), stiff, no odor, some silt with fine grained sand contained, moist	
			2.3/4.0	1.95 0.99	84-88	81.5-82.7': SILT: dark greenish gray (GLE Y1, 4/56Y), very soft, saturated 82.7-83.5': silty SAND: dark greenish gray (GLE Y1, 4/56Y), firm, no odor, some small shell fragments, moist 83.5-84.0': No recovery	
90							84.0-86.3': silty SAND: gray (GLE Y 1, 6/N), firm, no odor, saturated 86.3-88.0': No recovery
95							
100							



# ERM Environmental Resources Management

Boring/Well No.: MW-9B

Project: Hero Lands vs. Chevron Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789256, 3302713

Surface Elev.: NM Boring T.D.: 48 ft. Boring Dia.: 2.25" Soil, 3.25" Well

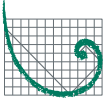
Date Started: 7/7/2020 Date Completed: 7/9/2020 Well Dia./Materials: 1" Pre-pack PVC

Drilling Company: Walker Hill Driller: Jack Womble

Drilling Method: Direct Push - Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: R. Charles Trahan, P.G. Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
0			2.6/4.0	0.27	NA	0-4	0.0-0.3': CLAY: very dark grayish brown (10YR, 3/1), medium soft to stiff, moist, no odor, little silt content, some shell fragments at bottom	
				1.97	NA		0.3-0.9': SAND: fine grained, brown (10YR, 4/3), loose, moist, no odor, some shell fragments at top	
5				2.0/4.0	1.63	NA	4-8	0.9-2.6': CLAY: very dark grayish brown (10YR, 3/2) to dark grayish brown (10YR, 4/2), stiff, moist, no odor, sand lens at 1.2-1.3' bgs by some Fe/Mn staining
					1.49	NA		2.6-4.0': No recovery
10				2.0/4.0	1.03	NA	8-12	4.0-6.0': CLAY: dark grayish brown (10YR, 4/2), stiff to medium soft, moist, no odor, Fe/Mn staining, some silt at top, little silt content
					1.35	NA		6.0-8.0': No recovery
15				1.0/4.0	2.08	NA	12-16	8.0-9.6': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, some clayey silt content
					2.52	NA		9.6-10.0': clayey SILT: dark gray (5Y, 4/1), soft, moist to slightly wet, no odor
20				2.9/4.0	4.39	NA	16-20	10.0-12.0': No recovery
					6.99	NA		12.0-13.0': SILT: dark gray (5Y, 4/1), firm, wet, no odor, very little clay content
25				2.9/4.0	6.75	NA	20-24	13.0-16.0': No recovery
					3.95	NA		16.0-18.0': SILT to clayey SILT: dark gray (5Y, 4/1), firm to medium soft, wet to slightly wet, no odor
30		4.0/4.0	1.87	NA	24-28	18.0-18.9': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, some silt content		
			2.37	NA		18.9-20.0': No recovery		
		2.9/4.0	0.68	NA	28-30	20.0-22.9': CLAY: dark gray (5Y, 4/1) to very dark gray (5Y, 3/1), medium soft, moist, no odor, some shell fragments at 21.0-22.4' bgs		
						22.9-24.0': No recovery		
						24.0-26.9': SILT: dark gray (5Y, 4/1), firm, saturated, no odor, some fine-grained sand		
						26.9-28.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor		
						28.0-30.0': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor		



DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (PPMV)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION		
30							(Cont. from page 1)		
			2.9/4.0	0.37	NA	30-32	30.0-30.9': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 30.9-32.0': No recovery		
			3.7/4.0	0.77	NA	32-36	32.0-33.3': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 33.3-34.4': CLAY: dark gray (4Y, 4/1), medium soft, moist, no odor 34.4-35.7': silty SAND: fine grained, dark gray (5Y, 4/1), medium dense, wet, no odor 35.7-36.0': No recovery		
				1.05	NA				
			3.7/4.0	0.45	NA	36-40	36.0-37.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, little sand at top 37.0-39.3': clayey SILT: dark gray (5Y, 5/1), medium soft, wet, no odor, some very small alternating clay lenses 39.3-39.7': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, some silt content 39.7-40.0': No recovery		
				3.44	NA				
			2.6/4.0	4.75	NA	40-44	40.0-42.6': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, little silt content from silt lenses 42.6-44.0': No recovery		
				5.25	NA				
			2.7/4.0	5.63	NA	44-48	44.0-46.0': CLAY: dark gray (5Y, 4/1), medium soft, moist, no odor, some silt content 46.0-46.7': clayey SILT: gray (5Y, 4/1), medium soft, moist to slightly wet, no odor, clay lens at bottom 46.7-48.0': No recovery		
				5.30	NA				
50									
55									
60									
65									



# Environmental Resources Management

Boring/Well No.: BC-1

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789109, 3302781

Surface Elev.: NM Boring T.D.: 16 ft. Boring Dia.: 3.25 inch

Date Started: 8/13/2018 Date Completed: 8/13/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Edward Graham Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.1/4.0	1.15	0-4	0.0-2.1': CLAY: brown, stiff, dry, no odor 2.1-4.0': No recovery
				1.18		
5			2.4/4.0	1.13	4-8	4.0-5.3': CLAY: brown, stiff, dry 5.3-6.4': CLAY: gray, damp, no odor 6.4-8.0': No recovery
				1.02		
10			3.0/4.0	1.39	8-12	8.0-11.0': clayey SILT: gray, soft, wet, no odor 11.0-12.0': No recovery
				1.65		
15			3.2/4.0	1.42	12-16	12.0-16.0': silty CLAY: gray, soft, wet, no odor
				1.31		
20						
25						
30						



# Environmental Resources Management

Boring/Well No.: BC-2A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789152, 3302596

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/13/2018 Date Completed: 8/14/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Edward Graham Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	8.02	0-4	0.0-2.6': CLAY: gray, stiff, dry 2.6-4.0': Not recovered
				12.42		
5			2.0/4.0	14.02	4-8	4.0-5.0': CLAY: gray, dry 5.0-6.0': CLAY: gray, soft, damp 6.0-8.0': Not recovered
				OR		
10			2.0/4.0	OR	8-12	8.0-9.0': clayey SILT: gray, damp 9.0-10.0': clayey SILT: gray, wet, no odor 10.0-12.0': Not recovered
				OR		
15			2.4/4.0	OR	12-16	12.0-14.4': silty CLAY: wet, no odor 14.4-16.0': Not recovered
				OR		
20			4.0/4.0	OR	16-20	16.0-18.0': silty CLAY: gray, soft, wet 18.0-20.0': clayey SILT: gray, soft, damp, no odor
				OR		
25			3.0/4.0	OR	20-24	20.0-22.0': silty CLAY: gray, damp, soft 22.0-23.0': SILT: gray, soft, wet, no odor 23.0-24.0': Not recovered
				7.07		
28			4.0/4.0	10.71	24-28	24.0-25.0': SAND: gray, wet, very soft 25.0-27.0': silty CLAY: gray, damp, soft 27.0-28.0': silty CLAY: gray, wet, soft, no odor
				3.27		
30			0.0/2.0	NR	28-30	28.0-30.0': Not recovered



Project No.: 0494255 Date Drilled: 8/13/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			0.0/2.0	NR	30-32	30.0-32.0': Not sampled
			4.0/4.0	4.44	32-36	32.0-36.0': clayey SILT: gray, very soft, wet, no odor
35				5.10		
			0.0/4.0	NR	36-40	36.0-40.0': Not sampled
40				NR		
			0.0/4.0	NR	40-44	40.0-44.0': Not sampled
45				NR		
			0.0/4.0	NR	44-48	44.0-48.0': Not sampled
50				NR		
			0.0/4.0	NR	48-52	48.0-52.0': Not sampled
55				NR		
			4.0/4.0	6.60	52-56	52.0-53.8': sandy SILT: gray, very soft, wet, no odor 53.8-55.0': clayey SILT: gray, medium soft, damp, no odor 55.0-56.0': CLAY: gray, stiff, dry
				7.02		
			3.3/4.0	6.86	56-60	56.0-59.3': CLAY: gray, medium stiff, dry 59.3-60.0': No recovery
				7.65		
60			4.0/4.0	7.01	60-64	60.0-64.0': CLAY: gray, medium stiff, dry
				6.91		
65			4.0/4.0	7.05	64-65	64.0-65.0': CLAY: light-gray, stiff, dry



Project No.: 0494255 Date Drilled: 8/13/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
65			4.0/4.0	7.30	65-68	65.0-67.4': CLAY: light-gray, stiff, dry 67.4-68.0': CLAY: dark-gray, stiff, dry, no odor	
70			3.0/4.0	6.50 6.47	68-72	68.0-72.0': CLAY: gray, stiff, dry, top 0.08' contained silty sand, gray loose, wet, no odor	
75			4.0/4.0	6.28 6.48	72-76	72.0-76.0': CLAY: gray, stiff, dry, bottom 0.08' becomes silty	
80			4.0/4.0	6.21 4.63	76-80	76.0-77.8': silty CLAY: gray, very soft, wet, no odor 77.8-80.0': silty CLAY: gray, medium soft, damp	
85			4.0/4.0	5.10 3.56	80-84	80.0-82.2': silty CLAY: gray, soft, wet 82.2-83.2': silty SAND: green with ISM, very stiff, damp 83.2-84.0': SAND: tan with black marbling/staining, very stiff dry	
90							
95							
100							





# Environmental Resources Management

Boring/Well No.: BC-2B/BC-2

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789152, 3302596

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/13/2018 Date Completed: 8/14/2018 Well Dia./Materials: 3/4 inch PVC

Note: P&A 8/20/2018

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

Logged by: Edward Graham Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	8.02	0-4	0.0-2.6': CLAY: gray, stiff, dry 2.6-4.0': Not recovered
				12.42		
5			2.0/4.0	14.02	4-8	4.0-5.0': CLAY: gray, dry 5.0-6.0': CLAY: gray, soft, damp 6.0-8.0': Not recovered
				OR		
10			2.0/4.0	OR	8-12	8.0-9.0': clayey SILT: gray, damp 9.0-10.0': clayey SILT: gray, wet, no odor 10.0-12.0': Not recovered
				OR		
15			2.4/4.0	OR	12-16	12.0-14.4': silty CLAY: wet, no odor 14.4-16.0': Not recovered
				OR		
20			4.0/4.0	OR	16-20	16.0-18.0': silty CLAY: gray, soft, wet 18.0-20.0': clayey SILT: gray, soft, damp, no odor
				OR		
25			3.0/4.0	OR	20-24	20.0-22.0': silty CLAY: gray, damp, soft 22.0-23.0': SILT: gray, soft, wet, no odor 23.0-24.0': Not recovered
				7.07		
30			4.0/4.0	10.71	24-28	24.0-25.0': SAND: gray, wet, very soft 25.0-27.0': silty CLAY: gray, damp, soft 27.0-28.0': silty CLAY: gray, wet, soft, no odor
				3.27		
			0.0/2.0	NR	28-30	28.0-30.0': Not recovered



Project No.: 0494255 Date Drilled: 8/13/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			0.0/2.0	NR	30-32	30.0-32.0': Not sampled
			4.0/4.0	4.44	32-36	32.0-36.0': clayey SILT: gray, very soft, wet, no odor
35				5.10		
			0.0/4.0	NR	36-40	36.0-40.0': Not sampled
40				NR		
			0.0/4.0	NR	40-44	40.0-44.0': Not sampled
45				NR		
			0.0/4.0	NR	44-48	44.0-48.0': Not sampled
50				NR		
			0.0/4.0	NR	48-52	48.0-52.0': Not sampled
55				NR		
			4.0/4.0	6.60	52-56	52.0-53.8': sandy SILT: gray, very soft, wet, no odor 53.8-55.0': clayey SILT: gray, medium soft, damp, no odor 55.0-56.0': CLAY: gray, stiff, dry
				7.02		
			3.3/4.0	6.86	56-60	56.0-59.3': CLAY: gray, medium stiff, dry 59.3-60.0': No recovery
				7.65		
60			4.0/4.0	7.01	60-64	60.0-64.0': CLAY: gray, medium stiff, dry
				6.91		
65			4.0/4.0	7.05	64-65	64.0-65.0': CLAY: light-gray, stiff, dry



Project No.: 0494255 Date Drilled: 8/13/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
65			4.0/4.0	7.30	65-68	65.0-67.4': CLAY: light-gray, stiff, dry 67.4-68.0': CLAY: dark-gray, stiff, dry, no odor	
70			3.0/4.0	6.50 6.47	68-72	68.0-72.0': CLAY: gray, stiff, dry, top 0.08' contained silty sand, gray loose, wet, no odor	
75			4.0/4.0	6.28 6.48	72-76	72.0-76.0': CLAY: gray, stiff, dry, bottom 0.08' becomes silty	
80			4.0/4.0	6.21 4.63	76-80	76.0-77.8': silty CLAY: gray, very soft, wet, no odor 77.8-80.0': silty CLAY: gray, medium soft, damp	
85			4.0/4.0	5.10 3.56	80-84	80.0-82.2': silty CLAY: gray, soft, wet 82.2-83.2': silty SAND: green with ISM, very stiff, damp 83.2-84.0': SAND: tan with black marbling/staining, very stiff dry	
90							
95							
100							



# Environmental Resources Management

Boring/Well No.: BC-2C

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789152, 3302596

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/13/2018 Date Completed: 8/15/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Edward Graham Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	8.02	0-4	0.0-2.6': CLAY: gray, stiff, dry 2.6-4.0': Not recovered
				12.42		
5			2.0/4.0	14.02	4-8	4.0-5.0': CLAY: gray, dry 5.0-6.0': CLAY: gray, soft, damp 6.0-8.0': Not recovered
				OR		
10			2.0/4.0	OR	8-12	8.0-9.0': clayey SILT: gray, damp 9.0-10.0': clayey SILT: gray, wet, no odor 10.0-12.0': Not recovered
				OR		
15			2.4/4.0	OR	12-16	12.0-14.4': silty CLAY: wet, no odor 14.4-16.0': Not recovered
				OR		
20			4.0/4.0	OR	16-20	16.0-18.0': silty CLAY: gray, soft, wet 18.0-20.0': clayey SILT: gray, soft, damp, no odor
				OR		
25			3.0/4.0	OR	20-24	20.0-22.0': silty CLAY: gray, damp, soft 22.0-23.0': SILT: gray, soft, wet, no odor 23.0-24.0': Not recovered
				7.07		
25	4.0/4.0		24-28	24.0-25.0': SAND: gray, wet, very soft 25.0-27.0': silty CLAY: gray, damp, soft 27.0-28.0': silty CLAY: gray, wet, soft, no odor		
		3.27				
30	0.0/2.0		28-30	NR	28.0-30.0': Not recovered	



Project No.: 0494255 Date Drilled: 8/13/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			0.0/2.0	NR	30-32	30.0-32.0': Not sampled
			4.0/4.0	4.44	32-36	32.0-36.0': clayey SILT: gray, very soft, wet, no odor
35				5.10		
			0.0/4.0	NR	36-40	36.0-40.0': Not sampled
40				NR		
			0.0/4.0	NR	40-44	40.0-44.0': Not sampled
45				NR		
			0.0/4.0	NR	44-48	44.0-48.0': Not sampled
50				NR		
			0.0/4.0	NR	48-52	48.0-52.0': Not sampled
55				NR		
			4.0/4.0	6.60	52-56	52.0-53.8': sandy SILT: gray, very soft, wet, no odor 53.8-55.0': clayey SILT: gray, medium soft, damp, no odor 55.0-56.0': CLAY: gray, stiff, dry
				7.02		
			3.3/4.0	6.86	56-60	56.0-59.3': CLAY: gray, medium stiff, dry 59.3-60.0': No recovery
				7.65		
60			4.0/4.0	7.01	60-64	60.0-64.0': CLAY: gray, medium stiff, dry
				6.91		
65			4.0/4.0	7.05	64-65	64.0-65.0': CLAY: light-gray, stiff, dry



Project No.: 0494255 Date Drilled: 8/13/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
65			4.0/4.0	7.30	65-68	65.0-67.4': CLAY: light-gray, stiff, dry 67.4-68.0': CLAY: dark-gray, stiff, dry, no odor	
70			3.0/4.0	6.50 6.47	68-72	68.0-72.0': CLAY: gray, stiff, dry, top 0.08' contained silty sand, gray loose, wet, no odor	
75			4.0/4.0	6.28 6.48	72-76	72.0-76.0': CLAY: gray, stiff, dry, bottom 0.08' becomes silty	
80			4.0/4.0	6.21 4.63	76-80	76.0-77.8': silty CLAY: gray, very soft, wet, no odor 77.8-80.0': silty CLAY: gray, medium soft, damp	
85			4.0/4.0	5.10 3.56	80-84	80.0-82.2': silty CLAY: gray, soft, wet 82.2-83.2': silty SAND: green with ISM, very stiff, damp 83.2-84.0': SAND: tan with black marbling/staining, very stiff dry	
90							
95							
100							



# Environmental Resources Management

Boring/Well No.: BC-2D

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789152, 3302596

Surface Elev.: NM Boring T.D.: 84 ft. Boring Dia.: 3.25 inch

Date Started: 8/14/2018 Date Completed: 8/14/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push - Geoprobe Grouting Method: Tremie Method

Logged by: Christopher Young Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	8.02	0-4	0.0-2.6': CLAY: gray, stiff, dry 2.6-4.0': Not recovered
				12.42		
5			2.0/4.0	14.02	4-8	4.0-5.0': CLAY: gray, dry 5.0-6.0': CLAY: gray, soft, damp 6.0-8.0': Not recovered
				OR		
10			2.0/4.0	OR	8-12	8.0-9.0': clayey SILT: gray, damp 9.0-10.0': clayey SILT: gray, wet, no odor 10.0-12.0': Not recovered
				OR		
15			2.4/4.0	OR	12-16	12.0-14.4': silty CLAY: wet, no odor 14.4-16.0': Not recovered
				OR		
20			4.0/4.0	OR	16-20	16.0-18.0': silty CLAY: gray, soft, wet 18.0-20.0': clayey SILT: gray, soft, damp, no odor
				OR		
25			3.0/4.0	OR	20-24	20.0-22.0': silty CLAY: gray, damp, soft 22.0-23.0': SILT: gray, soft, wet, no odor 23.0-24.0': Not recovered
				7.07		
25	4.0/4.0		24-28	24.0-25.0': SAND: gray, wet, very soft 25.0-27.0': silty CLAY: gray, damp, soft 27.0-28.0': silty CLAY: gray, wet, soft, no odor		
		3.27				
30	0.0/2.0		28-30	28.0-30.0': Not recovered		



Project No.: 0494255 Date Drilled: 8/14/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			0.0/2.0	NR	30-32	30.0-32.0': Not sampled
			4.0/4.0	4.44	32-36	32.0-36.0': clayey SILT: gray, very soft, wet, no odor
35				5.10		
			0.0/4.0	NR	36-40	36.0-40.0': Not sampled
40				NR		
			0.0/4.0	NR	40-44	40.0-44.0': Not sampled
45				NR		
			0.0/4.0	NR	44-48	44.0-48.0': Not sampled
50				NR		
			0.0/4.0	NR	48-52	48.0-52.0': Not sampled
55				NR		
			4.0/4.0	6.60	52-56	52.0-53.8': sandy SILT: gray, very soft, wet, no odor 53.8-55.0': clayey SILT: gray, medium soft, damp, no odor 55.0-56.0': CLAY: gray, stiff, dry
60				7.02		
			3.3/4.0	6.86	56-60	56.0-59.3': CLAY: gray, medium stiff, dry 59.3-60.0': No recovery
65				7.65		
			4.0/4.0	7.01	60-64	60.0-64.0': CLAY: gray, medium stiff, dry
				6.91		
			4.0/4.0	7.05	64-65	64.0-65.0': CLAY: light gray, stiff, dry





Project No.: 0494255 Date Drilled: 8/14/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION		
65			4.0/4.0	7.05	65-68	65.0-67.4': CLAY: light-gray, stiff, dry 67.4-68.0': CLAY: dark-gray, stiff, dry, no odor		
				7.30				
70			3.0/4.0	6.50	68-72	68.0-72.0': CLAY: gray, stiff, dry, top 0.08' contained silty sand, gray loose, wet, no odor		
				6.47				
75			4.0/4.0	6.28	72-76	72.0-76.0': CLAY: gray, stiff, dry, bottom 0.08' becomes silty		
				6.48				
80			4.0/4.0	6.21	76-80	76.0-77.8': silty CLAY: gray, very soft, wet, no odor 77.8-80.0': silty CLAY: gray, medium soft, damp		
				4.63				
85			4.0/4.0	5.10	80-84	80.0-82.2': silty CLAY: gray, soft, wet 82.2-83.2': silty SAND: green with iron-stained mottling, very stiff, damp 83.2-84.0': SAND: tan with black marbling/staining, very stiff, dry		
				3.56				
90								
95								
100								



# Environmental Resources Management

Boring/Well No.: BC-3A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789224, 3302574

Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 3.25 inch

Date Started: 5/15/2018 Date Completed: 5/15/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Christopher Young Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.8/4.0	2.05	0-4	0.0-1.0': CLAY: topsoil, brown, very stiff, dry 1.0-2.8': CLAY: topsoil, brown-gray, stiff, dry 2.8-4.0': No recovery
				2.66		
5			3.25/4.0	3.24	4-8	4.0-7.0': CLAY: gray, stiff, dry, iron-stained mottling 7.0-7.25': ORGANICS: black, stiff, dry 7.25-8.0': No recovery
				3.13		
10			2.8/4.0	4.40	8-12	8.0-8.6': CLAY: brown, stiff, dry 8.6-10.8': CLAY: gray, stiff, dry 10.8-12.0': No recovery
				5.34		
15			4.0/4.0	6.67	12-16	12.0-16.0': silty CLAY: gray, soft, wet
				11.52		
20			4.0/4.0	15.67	16-20	16.0-16.6': silty CLAY: gray, very soft, wet 16.6-20.0': CLAY: gray, soft, dry
				12.17		
25			4.0/4.0	7.58	20-24	20.0-23.3': CLAY: gray, medium soft, dry 23.3-24.0': silty CLAY: gray, very soft, wet
				4.25		
30						



# Environmental Resources Management

Boring/Well No.: BC-3B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789224, 3302574

Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 3.25 inch

Date Started: 8/15/2018 Date Completed: 8/15/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Christopher Young Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0	[Diagonal hatching pattern]	[Stippled pattern]	2.8/4.0	2.05	0-4	0.0-1.0': CLAY: topsoil, brown, very stiff, dry 1.0-2.8': CLAY: topsoil, brown-gray, stiff, dry 2.8-4.0': No recovery
				2.66		
5	[Diagonal hatching pattern]	[Stippled pattern]	3.25/4.0	3.24	4-8	4.0-7.0': CLAY: gray, stiff, dry, iron-stained mottling 7.0-7.25': ORGANICS: black, stiff, dry 7.25-8.0': No recovery
				3.13		
10	[Diagonal hatching pattern]	[Stippled pattern]	2.8/4.0	4.40	8-12	8.0-8.6': CLAY: brown, stiff, dry 8.6-10.8': CLAY: gray, stiff, dry 10.8-12.0': No recovery
				5.34		
15	[Diagonal hatching pattern]	[Stippled pattern]	4.0/4.0	6.67	12-16	12.0-16.0': silty CLAY: gray, soft, wet
				11.52		
20	[Diagonal hatching pattern]	[Stippled pattern]	4.0/4.0	15.67	16-20	16.0-16.6': silty CLAY: gray, very soft, wet 16.6-20.0': CLAY: gray, soft, dry
				12.17		
25	[Diagonal hatching pattern]	[Stippled pattern]	4.0/4.0	7.58	20-24	20.0-23.3': CLAY: gray, medium soft, dry 23.3-24.0': silty CLAY: gray, very soft, wet
				4.25		
30						



# Environmental Resources Management

Boring/Well No.: BC-4A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 787519, 3301245

Surface Elev.: NM Boring T.D.: 80 ft. Boring Dia.: 3.25 inch

Date Started: 8/16/2018 Date Completed: 8/17/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Christopher Young Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.4/4.0	1.33	0-4	0.0-2.4': CLAY: brown-gray, very stiff, dry, no odor, iron-stained mottling at 1.8-2.4' 2.4-4.0': No recovery
5				1.65		
5			3.0/4.0	1.24	4-8	4.0-6.6': silty CLAY: gray, stiff, dry, iron-stained mottling 6.6-7.0': SILT: gray, soft, moist, no odor 7.0-8.0': No recovery
10				1.23		
10			2.6/4.0	0.72	8-12	8.0-10.6': clayey SILT: gray, moist to wet, soft, no odor 10.6-12.0': No recovery
15				0.69		
15			4.0/4.0	NR	12-16	12.0-16.0': silty CLAY: gray, loose, moist, clay lens at 14.7-15.5'
20				NR		
20			4.0/4.0	0.86	16-20	16.0-18.6': sandy SILT: gray, soft, loose, wet, no odor 18.6-20.0': silty CLAY: gray, damp, soft, shell fragments at 19.3', no odor
25				3.25		
25			4.0/4.0	3.71	20-24	20.0-21.4': sandy SILT: fine, gray, soft, wet 21.4-24.0': silty CLAY: gray, soft, damp, shells at 23.6'
30				5.60		
30			3.8/4.0	5.92	24-28	24.0-27.8': silty CLAY: gray, soft, damp, no odor, silt lens at 27.4', gray, loose, wet, no odor 27.8'-28.0': No recovery
35				7.52		
35			4.0/4.0	7.91	28-30	28.0-30.0': silty CLAY: gray, soft, damp, no odor, silt lens at 28.0', gray, loose, wet, no odor
40						



Project No.: 0494255 Date Drilled: 8/16/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
30			4.0/4.0	8.08	30-32	30.0-32.0': silty CLAY: gray, soft, damp, no odor, silt lens at 30.7' and 31.8', gray, loose, wet, no odor	
			4.0/4.0	8.22	32-36	32.0-36.0': silty CLAY: gray, soft, dry, no odor, silt lens at 34.8' and 35.5', gray, loose, wet, no odor	
35				9.12			
			4.0/4.0	8.21	36-40	36.0-40.0': silty CLAY: gray, soft, dry, no odor, silt lens at 38.6' and 39.3', gray, loose, dry, no odor	
40				9.00			
			4.0/4.0	9.78	40-44	40.0-44.0': silty CLAY: gray, stiff, dry, no odor	
				8.01			
45				3.7/4.0	9.57	44-48	44.0-47.7': CLAY: gray, stiff, dry, no odor
					9.59		47.7-48.0': No recovery
50				3.8/4.0	9.19	48-52	48.0-51.8': CLAY: gray, stiff, dry, no odor
					10.12		51.8-52.0': No recovery
55				3.7/4.0	10.30	52-56	52.0-55.7': CLAY: gray, stiff, dry, no odor
			10.41	55.7-56.0': No recovery			
		3.8/4.0	10.45	56-60	56.0-59.8': CLAY: gray, stiff, dry, no odor, silt lens at 58.8', gray, loose, dry		
			9.63		59.8-60.0': No recovery		
60		4.0/4.0	10.50	60-64	60.0-64.0': CLAY: gray, stiff, dry, no odor, transitions to dark gray at 62.7'		
			10.84				
65		3.3/4.0	10.23	64-65	64.0-65.0': CLAY: gray, stiff, dry, no odor		



Project No.: 0494255 Date Drilled: 8/16/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
65			3.3/4.0	10.28	65-68	65.0-68.0': CLAY: gray, stiff, dry, no odor, transitions from dark gray to light gray at 65.8'
70			4.0/4.0	10.37	68-72	68.0-70.8': CLAY: gray, stiff, dry, no odor 70.8-72.0': clayey SILT: gray, medium dense, dry, shells
				6.85		
75			4.0/4.0	9.99	72-76	72.0-74.3': clayey SILT: gray, medium dense, dry, shells 74.3-76.0': CLAY: gray, stiff, dry, no odor
				9.35		
80			4.0/4.0	7.66	76-80	76.0-79.0': silty CLAY: gray, medium dense, dry, shells, transitions to clayey silt 79.0-80.0': sandy SILT: gray, dense, dry, iron-stained mottling
				4.46		
			0.0/4.0	NR	80-84	80.0-84.0': No sample
				NR		
85						
90						
95						
100						



# Environmental Resources Management

Boring/Well No.: BC-4B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 787519, 3301245

Surface Elev.: NM Boring T.D.: 80 ft. Boring Dia.: 3.25 inch

Date Started: 8/16/2018 Date Completed: 8/17/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Christopher Young Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0						
			2.4/4.0	1.33	0-4	0.0-2.4': CLAY: brown-gray, very stiff, dry, no odor, iron-stained mottling at 1.8-2.4'
				1.65		2.4-4.0': No recovery
5			3.0/4.0	1.24	4-8	4.0-6.6': silty CLAY: gray, stiff, dry, iron-stained mottling
				1.23		6.6-7.0': SILT: gray, soft, moist, no odor
						7.0-8.0': No recovery
10			2.6/4.0	0.72	8-12	8.0-10.6': clayey SILT: gray, moist to wet, soft, no odor
				0.69		10.6-12.0': No recovery
15			4.0/4.0	NR	12-16	12.0-16.0': silty CLAY: gray, loose, moist, clay lens at 14.7-15.5'
				NR		
20			4.0/4.0	0.86	16-20	16.0-18.6': sandy SILT: gray, soft, loose, wet, no odor
				3.25		18.6-20.0': silty CLAY: gray, damp, soft, shell fragments at 19.3', no odor
25			4.0/4.0	3.71	20-24	20.0-21.4': sandy SILT: fine, gray, soft, wet
				5.60		21.4-24.0': silty CLAY: gray, soft, damp, shells at 23.6'
30			3.8/4.0	5.92	24-28	24.0-27.8': silty CLAY: gray, soft, damp, no odor, silt lens at 27.4', gray, loose, wet, no odor
				7.52		27.8'-28.0': No recovery
			4.0/4.0	7.91	28-30	28.0-30.0': silty CLAY: gray, soft, damp, no odor, silt lens at 28.0', gray, loose, wet, no odor



Project No.: 0494255 Date Drilled: 8/16/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			4.0/4.0	8.08	30-32	30.0-32.0': silty CLAY: gray, soft, damp, no odor, silt lens at 30.7' and 31.8', gray, loose, wet, no odor
			4.0/4.0	8.22	32-36	32.0-36.0': silty CLAY: gray, soft, dry, no odor, silt lens at 34.8' and 35.5', gray, loose, wet, no odor
35				9.12		
			4.0/4.0	8.21	36-40	36.0-40.0': silty CLAY: gray, soft, dry, no odor, silt lens at 38.6' and 39.3', gray, loose, dry, no odor
40				9.00		
			4.0/4.0	9.78	40-44	40.0-44.0': silty CLAY: gray, stiff, dry, no odor
				8.01		
45				3.7/4.0	44-48	44.0-47.7': CLAY: gray, stiff, dry, no odor 47.7-48.0': No recovery
				9.59		
50				3.8/4.0	48-52	48.0-51.8': CLAY: gray, stiff, dry, no odor 51.8-52.0': No recovery
				10.12		
55				3.7/4.0	52-56	52.0-55.7': CLAY: gray, stiff, dry, no odor 55.7-56.0': No recovery
		10.41				
		3.8/4.0	56-60	56.0-59.8': CLAY: gray, stiff, dry, no odor, silt lens at 58.8', gray, loose, dry 59.8-60.0': No recovery		
60		9.63				
		4.0/4.0	60-64	60.0-64.0': CLAY: gray, stiff, dry, no odor, transitions to dark gray at 62.7'		
		10.50				
		3.3/4.0	64-65	64.0-65.0': CLAY: gray, stiff, dry, no odor		
65						





# Environmental Resources Management

Boring/Well No.: BC-4B

Project No.: 0494255 Date Drilled: 8/16/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
65			3.3/4.0	10.28	65-68	65.0-68.0': CLAY: gray, stiff, dry, no odor, transitions from dark gray to light gray at 65.8'
70			4.0/4.0	10.37	68-72	68.0-70.8': CLAY: gray, stiff, dry, no odor
				6.85		70.8-72.0': clayey SILT: gray, medium dense, dry, shells
75			4.0/4.0	9.99	72-76	72.0-74.3': clayey SILT: gray, medium dense, dry, shells
				9.35		74.3-76.0': CLAY: gray, stiff, dry, no odor
80			4.0/4.0	7.66	76-80	76.0-79.0': silty CLAY: gray, medium dense, dry, shells, transitions to clayey silt
		4.46	79.0-80.0': sandy SILT: gray, dense, dry, iron-stained mottling			
		0.0/4.0	NR	80-84	80.0-84.0': No sample	
			NR			
85						
90						
95						
100						



# Environmental Resources Management

Boring/Well No.: BC-4C

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 787519, 3301245

Surface Elev.: NM Boring T.D.: 80 ft. Boring Dia.: 3.25 inch

Date Started: 8/16/2018 Date Completed: 8/17/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Tremie Method

Logged by: Christopher Young Soil Sample Method: Geoprobe Tube with Acetate Liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.4/4.0	1.33	0-4	0.0-2.4': CLAY: brown-gray, very stiff, dry, no odor, iron-stained mottling at 1.8-2.4' 2.4-4.0': No recovery
				1.65		
5			3.0/4.0	1.24	4-8	4.0-6.6': silty CLAY: gray, stiff, dry, iron-stained mottling 6.6-7.0': SILT: gray, soft, moist, no odor 7.0-8.0': No recovery
				1.23		
10			2.6/4.0	0.72	8-12	8.0-10.6': clayey SILT: gray, moist to wet, soft, no odor 10.6-12.0': No recovery
				0.69		
15			4.0/4.0	NR	12-16	12.0-16.0': silty CLAY: gray, loose, moist, clay lens at 14.7-15.5'
				NR		
20			4.0/4.0	0.86	16-20	16.0-18.6': sandy SILT: gray, soft, loose, wet, no odor 18.6-20.0': silty CLAY: gray, damp, soft, shell fragments at 19.3', no odor
				3.25		
25			4.0/4.0	3.71	20-24	20.0-21.4': sandy SILT: fine, gray, soft, wet 21.4-24.0': silty CLAY: gray, soft, damp, shells at 23.6'
				5.60		
30	3.8/4.0	5.92	24-28	24.0-27.8': silty CLAY: gray, soft, damp, no odor, silt lens at 27.4', gray, loose, wet, no odor 27.8'-28.0': No recovery		
		7.52				
	4.0/4.0	7.91	28-30	28.0-30.0': silty CLAY: gray, soft, damp, no odor, silt lens at 28.0', gray, loose, wet, no odor		



Project No.: 0494255 Date Drilled: 8/16/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
30			4.0/4.0	8.08	30-32	30.0-32.0': silty CLAY: gray, soft, damp, no odor, silt lens at 30.7' and 31.8', gray, loose, wet, no odor	
			4.0/4.0	8.22	32-36	32.0-36.0': silty CLAY: gray, soft, dry, no odor, silt lens at 34.8' and 35.5', gray, loose, wet, no odor	
35				9.12			
			4.0/4.0	8.21	36-40	36.0-40.0': silty CLAY: gray, soft, dry, no odor, silt lens at 38.6' and 39.3', gray, loose, dry, no odor	
40				9.00			
			4.0/4.0	9.78	40-44	40.0-44.0': silty CLAY: gray, stiff, dry, no odor	
				8.01			
45				3.7/4.0	9.57	44-48	44.0-47.7': CLAY: gray, stiff, dry, no odor
					9.59		47.7-48.0': No recovery
50				3.8/4.0	9.19	48-52	48.0-51.8': CLAY: gray, stiff, dry, no odor
					10.12		51.8-52.0': No recovery
55				3.7/4.0	10.30	52-56	52.0-55.7': CLAY: gray, stiff, dry, no odor
			10.41	55.7-56.0': No recovery			
		3.8/4.0	10.45	56-60	56.0-59.8': CLAY: gray, stiff, dry, no odor, silt lens at 58.8', gray, loose, dry		
			9.63		59.8-60.0': No recovery		
60		4.0/4.0	10.50	60-64	60.0-64.0': CLAY: gray, stiff, dry, no odor, transitions to dark gray at 62.7'		
			10.84				
65		3.3/4.0	10.23	64-65	64.0-65.0': CLAY: gray, stiff, dry, no odor		



Project No.: 0494255 Date Drilled: 8/16/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
65			3.3/4.0	10.28	65-68	65.0-68.0': CLAY: gray, stiff, dry, no odor, transitions from dark gray to light gray at 65.8'
70			4.0/4.0	10.37	68-72	68.0-70.8': CLAY: gray, stiff, dry, no odor 70.8-72.0': clayey SILT: gray, medium dense, dry, shells
				6.85		
75			4.0/4.0	9.99	72-76	72.0-74.3': clayey SILT: gray, medium dense, dry, shells 74.3-76.0': CLAY: gray, stiff, dry, no odor
				9.35		
80			4.0/4.0	7.66	76-80	76.0-79.0': silty CLAY: gray, medium dense, dry, shells, transitions to clayey silt 79.0-80.0': sandy SILT: gray, dense, dry, iron-stained mottling
				4.46		
85			0.0/4.0	NR	80-84	80.0-84.0': No sample
				NR		
90						
95						
100						



# Environmental Resources Management

Boring/Well No.: BC-5

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789209, 3302278

Surface Elev.: 3.35 ft. Boring T.D.: 20 ft. Boring Dia.: 3.25 inch

Date Started: 8/20/2018 Date Completed: 8/20/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Portland/Bentonite

Logged by: Christopher Young Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0						
			2.0/4.0	1.38	0-4	0.0-1.0': gravelly SAND: brown, loose, wet, concretions present 1.0-2.0': CLAY: gray, stiff, dry, no odor, shells at 1.8' 2.0-4.0': No recovery
				4.32		
5			1.3/4.0	4.88	4-8	4.0-5.3': CLAY: gray, stiff, dry, no odor 5.3-8.0': No recovery
				6.00		
10			4.0/4.0	6.15	8-12	8.0-12.0': CLAY: gray, stiff, dry, no odor, color changes to dark gray/black at 9.0-10.0'
				8.78		
15			3.0/4.0	6.90	12-16	12.0-13.3': clayey SILT: gray, loose, wet, no odor 13.3-15.0': silty CLAY: gray, medium soft, damp, no odor 15.0-16.0': No recovery
				5.36		
20			3.0/4.0	6.24	16-20	16.0-16.8': silty CLAY: gray, loose/soft, damp, no odor 16.8-17.8': silty CLAY: gray, medium soft, moist, no odor 17.8-19.0': silty CLAY: gray, medium soft, dry, no odor 19.0-20.0': No recovery
				7.92		
25						
30						



# Environmental Resources Management

Boring/Well No.: BC-6

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789191, 3302315

Surface Elev.: 3.04 ft. Boring T.D.: 20 ft. Boring Dia.: 3.25 inch

Date Started: 8/21/2018 Date Completed: 8/21/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push – Geoprobe Grouting Method: Portland/Bentonite

Logged by: Christopher Young Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0						
0.0-0.8'			1.8/4.0	0.19	0-4	0.0-0.8': SAND: brown, moist, loose, no odor, black organic matter at 0.1'
0.8-1.8'				2.64		0.8-1.8': CLAY: gray, dry, medium soft, no odor
1.8-4.0'						1.8-4.0': No recovery
4.0-6.8'			3.5/4.0	2.41	4-8	4.0-6.8': CLAY: gray, medium stiff, dry, no odor
6.8-7.5'				3.12		6.8-7.5': clayey SILT: gray, loose, wet, no odor
7.5-8.0'						7.5-8.0': No recovery
8.0-8.9'			2.7/4.0	3.26	8-12	8.0-8.9': clayey SILT: gray, loose, wet, no odor, clay lens, gray, soft, moist at 8.6'
8.9-10.7'				4.65		8.9-10.7': CLAY: gray, medium soft, dry, no odor
10.7-12.0'						10.7-12.0': No recovery
12.0-12.4'			2.6/4.0	3.42	12-16	12.0-12.4': CLAY: gray, medium soft, dry, no odor
12.4-14.6'				2.82		12.4-14.6': clayey SILT: gray, medium soft/loose, damp, silt lens, gray, loose, wet, no odor at 13.7'
14.6-16.0'						14.6-16.0': No recovery
16.0-16.9'			3.5/4.0	4.15	16-20	16.0-16.9': SILT: gray, loose, wet, no odor
16.9-17.4'				4.51		16.9-17.4': clayey SILT to silty CLAY: gray, medium soft, moist, no odor
17.4-19.5'						17.4-19.5': CLAY: gray, stiff, dry, some shells
19.5-20.0'						19.5-20.0': No recovery
20						
25						
30						



# Environmental Resources Management

Boring/Well No.: BC-7A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789164, 3302169

Surface Elev.: 3.06 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/21/2018 Date Completed: 8/21/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0						
0.0-0.3'			1.6/4.0	3.38	0-4	0.0-0.3': FILL 0.3-1.6': silty CLAY: gray, soft, damp, slight odor 1.6-4.0': No recovery
5			3.1/4.0	4.78	4-8	4.0-7.1': CLAY: some silt, gray, medium soft, damp 7.1-8.0': No recovery
				6.92		
10			3.2/4.0	16.73	8-12	8.0-11.2': CLAY: gray, medium soft to soft, damp, organics at 8.9' 11.2-12.0': No recovery
				OR		
15			2.5/4.0	OR	12-16	12.0-14.5': clayey SILT: gray, soft, moist to wet 14.5-16.0': No recovery
				OR		
20			3.7/4.0	OR	16-20	16.0-17.5': SILT: gray, very soft, saturated 17.5-19.7': silty CLAY: gray, medium soft, damp 19.7-20.0': No recovery
				19.34		
25			2.6/4.0	16.56	20-24	20.0-22.6': silty CLAY: gray, medium soft, damp, shell fragments 22.6-24.0': No recovery
				4.26		
30			4.0/4.0	6.34	24-28	24.0-28.0': SAND: fine, gray, loose to semi dense, saturated
				2.25		



# Environmental Resources Management

Boring/Well No.: BC-7B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789164, 3302169

Surface Elev.: 3.06 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/21/2018 Date Completed: 8/21/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0						
0-4			1.6/4.0	3.38	0-4	0.0-0.3': FILL 0.3-1.6': silty CLAY: gray, soft, damp, slight odor 1.6-4.0': No recovery
4-8			3.1/4.0	4.78 6.92	4-8	4.0-7.1': CLAY: some silt, gray, medium soft, damp 7.1-8.0': No recovery
8-12			3.2/4.0	16.73 OR	8-12	8.0-11.2': CLAY: gray, medium soft to soft, damp, organics at 8.9' 11.2-12.0': No recovery
12-16			2.5/4.0	OR OR	12-16	12.0-14.5': clayey SILT: gray, soft, moist to wet 14.5-16.0': No recovery
16-20			3.7/4.0	OR 19.34	16-20	16.0-17.5': SILT: gray, very soft, saturated 17.5-19.7': silty CLAY: gray, medium soft, damp 19.7-20.0': No recovery
20-24			2.6/4.0	16.56 4.26	20-24	20.0-22.6': silty CLAY: gray, medium soft, damp, shell fragments 22.6-24.0': No recovery
24-28			4.0/4.0	6.34 2.25	24-28	24.0-28.0': SAND: fine, gray, loose to semi dense, saturated
28-30						





Project No.: 0494255 Date Drilled: 8/21/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30 35 40 45 50 55 60 65							



# Environmental Resources Management

Boring/Well No.: BC-8A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789202, 3302141

Surface Elev.: 2.60 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/22/2018 Date Completed: 8/22/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	2.03	0-4	0.0-2.1': silty CLAY: some gravel, gray, medium soft to stiff, damp, odor present 2.1-2.6': SAND: gray brown, loose to semi dense, damp 2.6-4.0': No recovery
				0.42		
5			3.0/4.0	6.59	4-8	4.0-5.5': SILT: some clay, gray brown, loose to semi dense, damp, odor present, greasy 5.5-7.0': CLAY: gray, medium soft to stiff, damp, odor present 7.0-8.0': No recovery
				17.51		
10			3.2/4.0	OR	8-12	8.0-11.2': silty CLAY: dark grayish brown, medium soft, damp, odor at top, silt at bottom 11.2-12.0': No recovery
				OR		
15			2.8/4.0	OR	12-16	12.0-14.8': clayey SILT: gray, medium soft, moist, no odor 14.8-16.0': No recovery
				OR		
20			4.0/4.0	OR	16-20	16.0-18.0': SILT: gray, very soft, saturated 18.0-20.0': silty CLAY: dark gray, medium soft, damp
				OR		
25			2.6/4.0	OR	20-24	20.0-22.6': silty CLAY to clayey SILT: stiff to medium soft, damp to moist, shell fragments at top 22.6-24.0': No recovery
				6.95		
30			4.0/4.0	6.78	24-28	24.0-28.0': silty SAND: fine, gray, loose at top, dense at bottom, saturated
				2.14		



# Environmental Resources Management

Boring/Well No.: BC-8B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789202, 3302141

Surface Elev.: 2.60 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 8/22/2018 Date Completed: 8/22/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	2.03	0-4	0.0-2.1': silty CLAY: some gravel, gray, medium soft to stiff, damp, odor present 2.1-2.6': SAND: gray brown, loose to semi dense, damp 2.6-4.0': No recovery
				0.42		
5			3.0/4.0	6.59	4-8	4.0-5.5': SILT: some clay, gray brown, loose to semi dense, damp, odor present, greasy 5.5-7.0': CLAY: gray, medium soft to stiff, damp, odor present 7.0-8.0': No recovery
				17.51		
10			3.2/4.0	OR	8-12	8.0-11.2': silty CLAY: dark grayish brown, medium soft, damp, odor at top, silt at bottom 11.2-12.0': No recovery
				OR		
15			2.8/4.0	OR	12-16	12.0-14.8': clayey SILT: gray, medium soft, moist, no odor 14.8-16.0': No recovery
				OR		
20			4.0/4.0	OR	16-20	16.0-18.0': SILT: gray, very soft, saturated 18.0-20.0': silty CLAY: dark gray, medium soft, damp
				OR		
25			2.6/4.0	OR	20-24	20.0-22.6': silty CLAY to clayey SILT: stiff to medium soft, damp to moist, shell fragments at top 22.6-24.0': No recovery
				6.95		
30			4.0/4.0	6.78	24-28	24.0-28.0': silty SAND: fine, gray, loose at top, dense at bottom, saturated
				2.14		



# Environmental Resources Management

Boring/Well No.: BC-8B

Project No.: 0494255 Date Drilled: 8/22/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30							
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-9

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788616, 3302017

Surface Elev.: NM Boring T.D.: 20 ft. Boring Dia.: 2.25 inch

Date Started: 10/24/2018 Date Completed: 10/24/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Tim

Drilling Method: Direct Push – Geoprobe Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.75/4.0	0.97	0-4	0.0-0.3': clayey SILT: dark brown, moist 0.3-1.75': silty CLAY: brown-gray to brown, stiff, damp 1.75-4.0': No recovery
				2.14		
5			1.5/4.0	1.6	4-8	4.0-5.25': silty CLAY: gray, stiff, damp, increasing silt with depth 5.25-5.5': SILT: gray, wet 5.5-8.0': No recovery
				1.14		
10			2.5/4.0	3.9	8-12	8.0-9.25': SILT and clayey SILT: gray, wet 9.25-10.5': sandy SILT: gray, wet 10.5-12.0': No recovery
				1.36		
15			2.75/4.0	2.85	12-16	12.0-14.75': sandy SILT: gray, wet 14.75-16.0': No recovery
				13.63		
20			3.75/4.0	15.51	16-20	16.0-19.75': sandy SILT: gray, wet 19.75-20.0': No recovery
				>20		
25						
30						



# Environmental Resources Management

Boring/Well No.: BC-10

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788648, 3302028

Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 2.25 inch

Date Started: 10/24/2018 Date Completed: 10/24/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Tim

Drilling Method: Direct Push – Geoprobe Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.17/4.0	1.36	0-4	0.0-2.2': silty CLAY: dark brown-gray with iron-stained mottling, stiff (1.5 tsf), some hydrocarbon odor in 2-4' core with some staining, damp 2.2-4.0': No recovery
				2.40		
5			1.08/4.0	2.39	4-8	4.0-4.8': silty CLAY and clayey SILT: gray, moist, firm, odor 4.8-5.1': SHELLS/LEAVES: odor, dark brown, moist 5.1-8.0': No recovery
				1.56		
10			1.58/4.0	2.72	8-12	8.0-8.25': silty CLAY: gray, stiff, damp 8.25-8.5': clayey SILT: organics, dark brown, moist, few shells, odor, staining 8.5-9.25': silty CLAY: with clayey silt layers, moist, gray, firm
				6.31		
15			3.0/4.0	7.7	12-16	9.25-9.58': sandy SILT: wet, gray 9.58-12.0': No recovery 12.0-14.5': sandy SILT: gray, wet, gradually changing to silty sand 14.5-15.0': silty SAND: gray, wet 15.0-16.0': No recovery
				14.8		
20			3.92/4.0	14.4	16-20	16.0-19.9': silty SAND: gray, wet 19.9-20.0': No recovery
				18.83		
25			3.83/4.0	>20	20-24	20.0-21.75': silty SAND: gray, wet 21.75-23.8': silty CLAY: gray, soft (0.4 tsf) 23.8-24.0': No recovery
				12.76		
30						



# Environmental Resources Management

Boring/Well No.: BC-11

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788565, 3302051

Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 2.25 inch

Date Started: 10/26/2018 Date Completed: 10/26/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Tim

Drilling Method: Direct Push – Geoprobe Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	EC (mS)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.67/4.0	3.06	0-4	0.0-2.67': silty CLAY: brown to gray (at 0.5'), stiff, damp, slight odor at 1.0'
				4.05		2.67-4.0': No Recovery
5			2.5/4.0	3.53	4-8	4.0-4.3': silty CLAY: gray, stiff, damp
				6.26		4.3-4.8': clayey SILT: gray, moist
10			3.5/4.0	7.85	8-12	4.8-6.0': SILT: some sand, wet, odor, gray
				7.77		6.0-6.5': clayey SILT: gray, moist
15			3.5/4.0	8.94	12-16	6.5-8.0': No Recovery
				5.99		8.0-9.0': clayey SILT: gray, moist
20			3.5/4.0	8.6	16-20	9.0-9.75': silty CLAY: soft, gray, damp
				9.05		9.75-11.5': sandy SILT: gray, wet
25			2.75/4.0	8.99	20-24	11.5-12.0': No Recovery
				NR		12.0-13.5': clayey SILT: with some silty clay, gray, wet to moist
30						13.5-13.75': silty CLAY: soft, gray, damp
						13.75-14.4': sandy SILT: wet, gray
						14.4-14.7': silty CLAY: soft, gray, damp
						14.7-15.5': clayey SILT: with sandy silt lenses, gray, wet
						15.5-16.0': No Recovery
						16.0-16.5': clayey SILT: gray, wet
						16.5-19.5': silty CLAY: with clayey silt veins, shells in clay at 18.5 and 19.5'
						19.5-20.0': No Recovery
						20.0-21.7': silty CLAY: gray, stiff, damp
						21.7-22.2': silty CLAY: with vegetation and clayey silt lenses, gray, damp
						22.2-22.75': sandy SILT: wet, gray
						22.75-24.0': No Recovery



# Environmental Resources Management

Boring/Well No.: BC-12

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788814, 3301959

Surface Elev.: 1.74 ft. Boring T.D.: 20 ft. Boring Dia.: 3.25 inch

Date Started: 11/1/2018 Date Completed: 11/1/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Mason Jewell

Drilling Method: Direct Push – Geoprobe Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.75/4.0	2.25	0-4	0.0-1.75': silty CLAY: gray-brown, stiff, damp, iron-stained mottling 1.75-4.0': No Recovery
				2.12		
5			1.75/4.0	1.43	4-8	4.0-5.0': silty CLAY: gray-brown, stiff, damp, iron-stained mottling 5.0-5.75': clayey SILT: brown, wet 5.75-8.0': No Recovery
				1.35		
10			2.25/4.0	1.48		
		1.40				
15			2.83/4.0	1.46	12-16	12.0-14.83': SILT: gray, wet, few clayey silt layers 14.83-16.0': No Recovery
				1.00		
20			3.4/4.0	1.57	16-20	16.0-17.0': clayey SILT: decreasing silt with depth, gray, wet to moist 17.0-18.5': silty CLAY: gray, firm, moist, few clayey silt lenses 18.5-19.1': silty SAND: gray, wet 19.1-19.4': silty CLAY and SILT: gray, alternating lenses 19.4-20.0': No Recovery
				2.31		
25						
30						





# Environmental Resources Management

Boring/Well No.: BC-13

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789130, 3302143

Surface Elev.: 2.60 ft. Boring T.D.: 16 ft. Boring Dia.: 3.25 inch

Date Started: 11/1/2018 Date Completed: 11/1/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Mason Jewell

Drilling Method: Hand Auger Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Hand Auger

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			4.0/4.0	0.41	0-4	0.0-4.0': silty SAND: gray, wet
				2.39		
5			0.0/4.0	NA	4-8	4.0-8.0': No recovery
			0.0/2.0	NA	8-10	8.0-10.0': No recovery
10			1.3/2.0	OR	10-12	10.0-12.0': silty CLAY: gray, stiff, damp
15			3.0/4.0	OR	12-16	12.0-12.5': SILT: gray, wt
				OR		12.5-14.5': silty CLAY: gray, firm, increasing silt with depth
					OR	14.5-15.0': SILT: gray, wet
						15.0-16.0': No recovery
20						
25						
30						



# Environmental Resources Management

Boring/Well No.: BC-14

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789198, 3301928

Surface Elev.: 3.05 ft. Boring T.D.: 20 ft. Boring Dia.: 3.25 inch

Date Started: 11/2/2018 Date Completed: 11/2/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Mason Jewell

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.25/4.0	1.63	0-4	0.0-0.8': silty CLAY: brown, stiff, damp 0.8-2.25': silty CLAY: gray, stiff, damp, odor 2.25-4.0': No Recovery
5				6.12		
5			1.83/4.0	6.50	4-8	4.0-5.83': silty CLAY: gray, stiff, damp, odor 5.83-8.0': No Recovery
10				6.84		
10			2.3/4.0	6.29	8-12	8.0-9.0': silty CLAY: gray, stiff, damp, odor 9.0-9.75': clayey SILT: gray, moist 9.75-10.3': silty SAND: gray, wet 10.3-12.0': No Recovery
15				1.58		
15			3.2/4.0	1.36	12-16	12.0-14.5': silty SAND: gray, wet 14.5-15.2': silty CLAY: gray, firm, damp, wood piece 15.2-16.0': No Recovery
20				11.4		
20			3.0/4.0	14.6	16-20	16.0-17.2': clayey SILT: gray, wet 17.2-19.0': silty CLAY: gray, stiff, damp 19.0-20.0': No Recovery
25				OR		
30						



# Environmental Resources Management

Boring/Well No.: BC-15

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789068, 3301805

Surface Elev.: 1.87 ft. Boring T.D.: 20 ft. Boring Dia.: 3.25 inch

Date Started: 11/2/2018 Date Completed: 11/2/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Mason Jewell

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Jody Shugart Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.83/4.0	2.95	0-4	0.0-2.83': silty CLAY: brown to gray (0.5'), stiff, damp, some mixed in limestone gravel in first foot, slight odor
				OR		2.83-4.0': No recovery
5			3.75/4.0	OR	4-8	4.0-7.75': silty CLAY: brown to gray, stiff, damp, odor 1" black stain at 7.0'
				OR		7.75-8.0': No recovery
10			1.25/4.0	OR	8-12	8.0-8.3': silty CLAY: brown to gray, stiff, damp, odor
				OR		8.3-9.25': SILT: gray, wet
15			3.0/4.0	OR	12-16	9.25-12.0': No recovery
				19.26		12.0-13.75': SILT: gray, wet
20			2.41/4.0	OR	16-20	13.75-15.0': clayey SILT and silty CLAY: alternating
				14.08		15.0-16.0': No recovery
25						16.0-18.41': silty CLAY: soft, gray, increased shell content with depth, shells at bottom
30						18.41-20.0': No recovery



# Environmental Resources Management

Boring/Well No.: BC-16

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789028, 3301844

Surface Elev.: 2.46 ft. Boring T.D.: 20 ft. Boring Dia.: 3.25 inch

Date Started: 11/5/2018 Date Completed: 11/5/2018 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Mason Jewell

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Caitlin Manieri Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	4.19	0-4	0.0-0.5': silty CLAY: brown, some shells 0.5-2.0': silty CLAY: gray, soft 2.0-4.0': No recovery
				15.95		
5			3.0/4.0	OR	4-8	4.0-6.0': silty CLAY: gray, soft 6.0-8.0': No recovery
				OR		
10			2.6/4.0	OR	8-12	8.0-10.0': clayey SILT: gray, soft, moist 10.0-10.6': sandy SILT: gray, wet 10.6-12.0': No recovery
				OR		
15			3.95/4.0	OR	12-16	12.0-14.0': sandy SILT: gray, wet 14.0-15.95': clayey SILT: gray, moist 15.95-16.0': No recovery
				OR		
20			3.6/4.0	OR	16-20	16.0-17.5': clayey SILT: gray, wet 17.5-19.6': silty CLAY: gray, soft 19.6-20.0': No recovery
				OR		
25						
30						



# Environmental Resources Management

Boring/Well No.: BC-17A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788120, 3300085

Surface Elev.: 4.35 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 1/22/2019 Date Completed: 1/23/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.3/4.0	0.6	0-4	0.0-3.3': CLAY: with a mix of sand silt and gravel, very dark gray (2.5Y, 3/1), stiff, damp, some Fe nodules 3.3-4.0': No recovery
				1.89		
5			3.1/4.0	2.35	4-8	4.0-7.1': SAND: medium, with clay lenses throughout, gray, dense, damp 7.1-8.0': No recovery
				1.11		
10			3.6/4.0	0.17	8-12	8.0-10.1': SAND: medium, gray, dense, moist to wet 10.1-11.6': CLAY: silt lenses, gray (GLE Y1, 5/N), medium soft, damp, some iron staining 11.6-12.0': No recovery
				0.83		
15			2.2/4.0	2.44	12-16	12.0-14.2': CLAY: with some silt at top, dark gray (GLE Y1, 4/N), medium soft, damp, some wood particles 14.2-16.0': No recovery
				2.85		
20			3.3/4.0	3.4	16-20	16.0-19.3': CLAY: dark gray (GLE Y1, 4/N), medium soft, damp, some silt at bottom 19.3-20.0': No recovery
				3.2		
25			4.0/4.0	2.7	20-24	20.0-24.0': SILT: dark gray (5Y, 4/1), dense, saturated, some clay lenses
				2.83		
30			4.0/4.0	3.67	24-28	24.0-25.6': SILT: with some clay lenses, dark gray (5Y, 4/1), dense, saturated 25.6-28.0': silty CLAY: dark gray (GLE Y1, 4/N), soft, damp
				5.94		
			3.5/4.0	6.6	28-30	28.0-30.0': CLAY: dark gray (GLE Y1, 4/N), medium soft, damp



Project No.: 0494255 Date Drilled: 1/22/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.5/4.0	6.1	30-32	30.0-31.5': CLAY: dark gray (GLEY1, 4/N), medium soft, damp, shell fragments at 30.0-31.0' 31.5-32.0': No recovery
35						
40						
45						
50						
55						
60						
65						



# Environmental Resources Management

Boring/Well No.: BC-17B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788120, 3300085

Surface Elev.: 4.35 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/12/2019 Date Completed: 2/12/2019 Well Dia./Materials: 3/4 inch PVC

Note: Well initially installed 1/23/2019, then P&A'd and reinstalled 2/12/2019.

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.3/4.0	0.6	0-4	0.0-3.3': CLAY: with a mix of sand silt and gravel, very dark gray (2.5Y, 3/1), stiff, damp, some Fe nodules 3.3-4.0': No recovery
				1.89		
5			3.1/4.0	2.35	4-8	4.0-7.1': SAND: medium, with clay lenses throughout, gray, dense, damp 7.1-8.0': No recovery
				1.11		
10			3.6/4.0	0.17	8-12	8.0-10.1': SAND: medium, gray, dense, moist to wet 10.1-11.6': CLAY: silt lenses, gray (GLE Y1, 5/N), medium soft, damp, some iron staining 11.6-12.0': No recovery
				0.83		
15			2.2/4.0	2.44	12-16	12.0-14.2': CLAY: with some silt at top, dark gray (GLE Y1, 4/N), medium soft, damp, some wood particles 14.2-16.0': No recovery
				2.85		
20			3.3/4.0	3.4	16-20	16.0-19.3': CLAY: dark gray (GLE Y1, 4/N), medium soft, damp, some silt at bottom 19.3-20.0': No recovery
				3.2		
25			4.0/4.0	2.7	20-24	20.0-24.0': SILT: dark gray (5Y, 4/1), dense, saturated, some clay lenses
				2.83		
			4.0/4.0	3.67	24-28	24.0-25.6': SILT: with some clay lenses, dark gray (5Y, 4/1), dense, saturated 25.6-28.0': silty CLAY: dark gray (GLE Y1, 4/N), soft, damp
				5.94		
30			3.5/4.0	6.6	28-30	28.0-30.0': CLAY: dark gray (GLE Y1, 4/N), medium soft, damp



Project No.: 0494255 Date Drilled: 2/12/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.5/4.0	6.1	30-32	30.0-31.5': CLAY: dark gray (GLEYS, 4/N), medium soft, damp, shell fragments at 30.0-31.0' 31.5-32.0': No recovery
35						
40						
45						
50						
55						
60						
65						





# Environmental Resources Management

Boring/Well No.: BC-18

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788243, 330019

Surface Elev.: 2.42 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 1/24/2019 Date Completed: 1/24/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	1.39	0-4	0.0-2.5': silty CLAY: grayish brown (2.5Y, 5/2), medium soft, damp to moist, moist/wet clayey silt lens at 1.8-2.3' 2.5-4.0': No recovery
				0.75		
5			2.0/4.0	2.17	4-8	4.0-6.0': CLAY: dark gray (2.5Y, 4/1), some silt at top, medium soft, damp, some wood fragments at bottom 6.0-8.0': No recovery
				2.04		
10			3.0/4.0	2.25	8-12	8.0-11.0': CLAY: dark gray (GLE Y1, 4/N), soft/medium, damp 11.0-12.0': No recovery
				2.17		
15			2.7/4.0	2.97	12-16	12.0-14.7': CLAY: very dark greenish gray (GLE Y1, 3/10Y), soft/medium, damp, moist clayey silt lens at 14.4-14.7' 14.7-16.0': No recovery
				2.17		
20			4.0/4.0	2.54	16-20	16.0-17.2': SILT: loose, saturated 17.2-20.0': clayey SILT: dark gray (5Y, 4/1), soft, moist to wet
				3.52		
25			3.6/4.0	3.06	20-24	20.0-22.4': SILT: loose, saturated 22.4-23.6': CLAY: with some silt, dark gray (GLE Y1, 4/N), medium soft, damp 23.6-24.0': No recovery
				6.8		
30			3.0/4.0	7.03	24-28	24.0-27.0': CLAY: with some silt, very dark gray (5Y, 3/1), soft/medium, damp, shell fragments 27.0-28.0': No recovery
				7.77		
			3.2/4.0	8.21	28-30	28.0-30.0': silty CLAY: very dark gray (5Y, 3/1), soft, damp



Project No.: 0494255 Date Drilled: 1/24/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.2/4.0	8.89	30-32	30.0-31.2': silty CLAY: very dark gray (5Y, 3/1), soft, damp 31.2-32.0': No recovery
35						
40						
45						
50						
55						
60						
65						



# Environmental Resources Management

Boring/Well No.: BC-19

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788364, 3299972

Surface Elev.: 4.95 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 1/25/2019 Date Completed: 1/29/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	1.05	0-4	0.0-2.6': CLAY: dark grayish brown (2.5Y, 4/2), medium soft, increasing silt with depth, rootlets and organics at top, moist silty clay at bottom 2.6-4.0': No recovery
				1.14		
5			2.5/4.0	1.11	4-8	4.0-6.5': CLAY: greenish gray (GLE Y1, 5/N), medium soft, damp, iron staining, silty clay at bottom 6.5-8.0': No recovery
				1.29		
10			2.1/4.0	1.29	8-12	8.0-10.1': silty CLAY: dark gray (GLE Y1, 4/N), soft/medium, damp to moist 10.1-12.0': No recovery
				0.99		
15			2.6/4.0	1.05	12-16	12.0-14.6': clayey SILT/silty CLAY: dark gray (GLE Y1, 4/N), soft, damp/moist 14.6-16.0': No recovery
				0.97		
20			2.8/4.0	1.24	16-20	16.0-18.8': clayey SILT/silty CLAY: dark gray (GLE Y1, 4/N), soft, damp/moist, some wood fragments at bottom 18.8-20.0': No recovery
				0.91		
25			3.1/4.0	1.29	20-24	20.0-23.1': clayey SILT/silty CLAY: dark gray (GLE Y1, 4/N), soft, damp/moist 23.1-24.0': No recovery
				2.16		
30	3.3/4.0	2.69	24-28	24.0-24.6': clayey SILT: very soft, saturated 24.6-27.3': silty CLAY/clayey SILT: dark gray (GLE Y1, 4/N), soft/medium, damp/moist 27.3-28.0': No recovery		
		4.75				
	2.6/4.0	3.68	28-30	28.0-30.0': silty CLAY: dark gray (GLE Y1, 4/N), medium soft, damp, shell fragments		



# Environmental Resources Management

Boring/Well No.: BC-19

Project No.: 0494255 Date Drilled: 1/25/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			2.6/4.0	5.46	30-32	30.0-30.6': silty CLAY: dark gray (GLEY1, 4/N), medium soft, damp, shell fragments 30.6-32.0': No recovery
35						
40						
45						
50						
55						
60						
65						



# Environmental Resources Management

Boring/Well No.: BC-20

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788420, 3299936

Surface Elev.: 5.34 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 1/28/2019 Date Completed: 1/28/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Aaron Jones Soil Sample Method: Direct Push – Geoprobe


DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.9/4.0	1.75	0-4	0.0-2.9': silty CLAY: brown, gray, stiff, damp 2.9-4.0': No recovery
				1.89		
5			1.6/4.0	1.11	4-8	4.0-5.6': SILT to silty CLAY: brown, damp 5.6-8.0': No recovery
				1.39		
10			2.3/4.0	1.0	8-12	8.0-10.3': CLAY: gray, wet, very wet at 10.5-11.1', lost plasticity 10.3-12.0': No recovery
				0.90		
15			3.3/4.0	1.01	12-16	12.0-15.3': CLAY: gray, very soft to medium, very damp to wet, very wet at 12.2-12.9', damp at 12.9-13.4', holding plasticity, alternating from wet to very damp 15.3-16.0': No recovery
				0.91		
20			3.2/4.0	0.89	16-20	16.0-19.2': silty CLAY: gray, very damp to wet, very soft to medium, alternating lenses of silty clay within wet clays, silty at 16.1-16.35' and 18.3-18.5', clay at 16.35-17.3' and 18.7-19.3', damp clay at 17.3-18.2', damp silty at 18.5-18.7' 19.2-20.0': No recovery
				1.29		
25			3.9/4.0	0.85	20-24	20.0-23.4': silty CLAY: gray, alternating very damp to wet, alternating very wet silty clay with damp clay 23.4-23.9': SILT: gray, slightly damp, stiff 23.9-24.0': No recovery
				0.90		
30	4.0/4.0	0.89	24-28	24.0-26.1': SILT and silty CLAY: gray, wet, very soft 26.1-27.1': silty CLAY: gray, wet, soft 27.1-28.0': CLAY: gray, damp, soft to medium		
		1.08				
	4.0/4.0	0.98	28-30	28.0-29.2': silty CLAY: gray, wet, very soft 29.2-30.0': CLAY: gray, damp, soft to medium		



# Environmental Resources Management

Boring/Well No.: BC-20

Project No.: 0494255 Date Drilled: 1/28/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			4.0/4.0	2.09	30-32	30.0-32.0': CLAY: gray, damp, soft to medium, red/brown lenses at 30.0', 30.7', and 31.2'
35						
40						
45						
50						
55						
60						
65						



# Environmental Resources Management

Boring/Well No.: BC-21A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788734, 3301516

Surface Elev.: -1.21 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 1/30/2019 Date Completed: 1/30/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Aaron Jones Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	3.51	0.5	0-4	0.0-0.1': CLAY: damp, roots
				4.99	0.75		0.1-2.0': CLAY: gray/brown, stiff, damp
5			1.4/4.0	5.27	0.5	4-8	2.0-4.0': No recovery
				4.76	0.4		4.0-4.8': CLAY: gray with brown lenses, wood fragments
10			2.4/4.0	5.10	0.1	8-12	4.8-5.1': CLAY: gray with red/brown lenses, stiff, damp
				5.69	0.4		5.1-5.4': silty CLAY: stiff to soft, damp
15			3.3/4.0	7.16	0.15	12-16	5.4-8.0': No recovery
				10.07	0.25		8.0-9.2': silty CLAY: gray, damp, stiff clay lenses, moderately soft around lenses
20			2.7/4.0	9.70	0.1	16-20	9.2-10.4': silty CLAY: gray, stiff, wet
				8.96	0.0		10.4-12.0': No recovery
25			3.6/4.0	8.46	0.0	20-24	12.0-12.75': SILT: gray, soft, very saturated
				4.33	0.6		12.75-13.0': CLAY: gray, soft with 1 alternating stiff lens, wet
30			3.3/4.0	6.75	0.0	24-28	13.0-14.1': silty CLAY: gray, stiff, wet
				NA	0.2		14.1-15.3': CLAY: gray, stiff, very damp
							15.3-16.0': No recovery
							16.0-17.7': silty CLAY: gray, moderately soft, damp
							17.7-17.8': shell lens
							17.8-18.7': CLAY: gray, soft, damp, with shells at 18.7'
							18.7-20.0': No recovery
							20.0-21.9': CLAY: silty clay lens at 20.9-21.1', gray, soft, wet
							21.9-22.0': SAND: dark gray/black, moderately soft, wet, coarse grained
							22.0-22.6': silty CLAY
							22.6-23.6': SAND to SILT: fine grained, gray, wet
							23.6-24.0': No recovery
							24.0-25.8': silty SAND: gray, wet, soft, alternating stiff clay lenses
							25.8-26.2': silty SAND: gray, wet, soft
							26.2-26.7': silty CLAY: stiff, damp
							26.7-27.3': SILT: gray, soft, damp
							27.3-28.0': CLAY: gray, damp, soft to medium



# Environmental Resources Management

Boring/Well No.: BC-21B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788734, 3301516

Surface Elev.: -1.21 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 1/30/2019 Date Completed: 1/30/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Aaron Jones Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	3.51	0.5	0-4	0.0-0.1': CLAY: damp, roots
				4.99	0.75		0.1-2.0': CLAY: gray/brown, stiff, damp
							2.0-4.0': No recovery
5			1.4/4.0	5.27	0.5	4-8	4.0-4.8': CLAY: gray with brown lenses, wood fragments
				4.76	0.4		4.8-5.1': CLAY: gray with red/brown lenses, stiff, damp
							5.1-5.4': silty CLAY: stiff to soft, damp
							5.4-8.0': No recovery
10			2.4/4.0	5.10	0.1	8-12	8.0-9.2': silty CLAY: gray, damp, stiff clay lenses, moderately soft around lenses
				5.69	0.4		9.2-10.4': silty CLAY: gray, stiff, wet
							10.4-12.0': No recovery
15			3.3/4.0	7.16	0.15	12-16	12.0-12.75': SILT: gray, soft, very saturated
				10.07	0.25		12.75-13.0': CLAY: gray, soft with 1 alternating stiff lens, wet
							13.0-14.1': silty CLAY: gray, stiff, wet
							14.1-15.3': CLAY: gray, stiff, very damp
							15.3-16.0': No recovery
20			2.7/4.0	9.70	0.1	16-20	16.0-17.7': silty CLAY: gray, moderately soft, damp
				8.96	0.0		17.7-17.8': shell lens
							17.8-18.7': CLAY: gray, soft, damp, with shells at 18.7'
							18.7-20.0': No recovery
25			3.6/4.0	8.46	0.0	20-24	20.0-21.9': CLAY: silty clay lens at 20.9-21.1', gray, soft, wet
				4.33	0.6		21.9-22.0': SAND: dark gray/black, moderately soft, wet, coarse grained
							22.0-22.6': silty CLAY
							22.6-23.6': SAND to SILT: fine grained, gray, wet
							23.6-24.0': No recovery
30	3.3/4.0	6.75	0.0	24-28	24.0-25.8': silty SAND: gray, wet, soft, alternating stiff clay lenses		
		NA	0.2		25.8-26.2': silty SAND: gray, wet, soft		
					26.2-26.7': silty CLAY: stiff, damp		
					26.7-27.3': SILT: gray, soft, damp		
					27.3-28.0': CLAY: gray, damp, soft to medium		





# Environmental Resources Management

Boring/Well No.: BC-22A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788683, 3302111

Surface Elev.: 0.44 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 1/30/2019 Date Completed: 1/30/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	3.59	1.25	0-4	0.0-0.2': Vegetation 0.2-2.0': silty CLAY: gray brown, stiff, damp 2.0-2.5': silty CLAY: soft, damp, no odor 2.5-4.0': No recovery
				4.19	0.25		
5			1.5/4.0	5.99	0.25	4-8	4.0-5.0': SILT: with some clay, brown gray, medium to soft, damp 5.0-5.5': SILT: brown, soft, wet, no odor 5.5-8.0': No recovery
				9.89	0.25		
10			3.1/4.0	OR	0.5	8-12	8.0-9.5': SILT: gray, soft, wet 9.5-10.1': CLAY and SILT: gray, medium to soft, damp 10.1-11.1': silty CLAY: gray, medium to soft, wet 11.1-12.0': No recovery *Note: water in liner
				OR	0.5		
15			3.5/4.0	OR	0.25	12-16	12.0-15.5': SILT: gray, medium soft, wet, no odor 15.5-16.0': No recovery
				OR	0.5		
20			3.7/4.0	OR	0.25	16-20	16.0-19.3': SILT: gray, medium to soft, wet 19.3-19.7': CLAY and SILT: gray, soft, wet, no odor 19.7-20.0': No recovery
				OR	0.5		
25			3.6/4.0	OR	0.0	20-24	20.0-21.3': SILT: gray, very soft, wet 21.3-23.6': CLAY and SILT: gray, medium to soft, damp, no odor, shells at 21.5-21.6' 23.6-24.0': No recovery
				11.65	1.0		
30			3.7/4.0	8.94	0.25	24-28	24.0-27.7': SILT: gray, medium soft, wet to damp, no odor 27.7-28.0': No recovery
				2.12	1.0		



# Environmental Resources Management

Boring/Well No.: BC-22B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788683, 3302111

Surface Elev.: 0.44 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 1/30/2019 Date Completed: 1/30/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	3.59	1.25	0-4	0.0-0.2': Vegetation
				4.19	0.25		0.2-2.0': silty CLAY: gray brown, stiff, damp
5			1.5/4.0	5.99	0.25	4-8	2.0-2.5': silty CLAY: soft, damp, no odor
					9.89		0.25
10			3.1/4.0	OR	0.5	8-12	4.0-5.0': SILT: with some clay, brown gray, medium to soft, damp
					OR		0.5
15			3.5/4.0	OR	0.25	12-16	5.5-8.0': No recovery
					OR		0.5
20			3.7/4.0	OR	0.25	16-20	9.5-10.1': CLAY and SILT: gray, medium to soft, damp
					OR		0.5
25			3.6/4.0	OR	0.0	20-24	11.1-12.0': No recovery
					11.65		1.0
30			3.7/4.0	8.94	0.25	24-28	12.0-15.5': SILT: gray, medium soft, wet, no odor
					2.12		1.0
							16.0-19.3': SILT: gray, medium to soft, wet
							19.7-20.0': No recovery
							21.3-23.6': CLAY and SILT: gray, medium to soft, damp, no odor, shells at 21.5-21.6'
							24.0-27.7': SILT: gray, medium soft, wet to damp, no odor



# Environmental Resources Management

Boring/Well No.: BC-23

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788832, 3301795

Surface Elev.: 0.83 ft. Boring T.D.: 24 ft. Boring Dia.: 3.25 inch

Date Started: 2/1/2019 Date Completed: 2/1/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Aaron Jones Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0				2.33			
			2.2/4.0	8.49	0.6	0-4	0.0-0.3': heavy organics: wood fragments, moss 0.3-2.2': CLAY: light gray with brown streaks, stiff, damp 2.2-4.0': No recovery
5			2.2/4.0	7.27	0.75	4-8	4.0-5.8': CLAY: brown streaks, stiff, damp 5.8-6.2': CLAY: soft, damp, no alternating color 6.2-8.0': No recovery
				17.33	0.1		
10			1.9/4.0	15.89	0.3	8-12	8.0-8.4': sandy silty CLAY: brown-gray, stiff, damp 8.4-9.9': silty CLAY: gray, soft, wet 9.9-12.0': No recovery
				OR	0.5		
15			3.9/4.0	OR	0.0	12-16	12.0-14.7': SILT: gray, soft, wet, with clay lenses 14.7-15.9': CLAY: gray, soft, very damp, with silty-clay lenses 15.9-16.0': No recovery
				OR	0.2		
20			2.4/4.0	OR	0.25	16-20	16.0-18.4': CLAY: gray, soft, very damp, silt lens at 17.9' and shell lens at 18.1' 18.4-20.0': No recovery
				14.41	0.20		
25			2.5/4.0	13.90	0.2	20-24	20.0-22.0': CLAY: gray, soft, damp, silt lens at 21.65-21.85' 22.0-22.5': SILT: gray, stiff, damp 22.5-24.0': No recovery
				4.31	0.75		
30							



# Environmental Resources Management

Boring/Well No.: BC-24A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788585, 3301640

Surface Elev.: 2.28 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/5/2019 Date Completed: 2/5/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Aaron Jones Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.4/4.0	2.69	0.9	0-4	0.0-2.4': CLAY: gray (7.5YR, 4/1), stiff, moist, with dark brown streaks 2.4-4.0': No recovery
				6.01	1.75		
5			2.2/4.0	5.88	1.0	4-8	4.0-4.9': CLAY: gray (7.5YR, 4/1) with brown/brown-red and dark gray streaks, stiff, moist 4.9-6.2': clayey SILT: red-brown, soft, damp 6.2-8.0': No recovery
				2.34	0.5		
10			3.0/4.0	12.51	0.6	8-12	8.0-11.0': SILT: dark gray (7.5YR, 3/1), stiff, wet 11.0-12.0': No recovery
				OR	1.0		
15			2.7/4.0	0.77	0.1	12-16	12.0-13.3': silty CLAY: gray with red/brown streaks, soft, very damp 13.3-14.7': clayey SILT: gray, wet, with clayey nodules 14.7-16.0': No recovery
				4.41	1.0		
20			3.7/4.0	OR	0.1	16-20	16.0-18.2': SILT: gray (2.5Y, 3/1), very soft, very wet 18.2-19.7': SILT: gray (2.5Y, 3/1), stiff, damp 19.7-20.0': No recovery
				13.09	1.6		
25			0.0/4.0	NA	NA	20-24	20.0-24.0': No recovery, interval lost from flow-in
				2.2/4.0	11.17	0.1	24-28
			4.49	0.25			
30			3.2/4.0	14.17	0.0	28-30	28.0-30.0': clayey SILT: gray (2.5Y, 4/1), soft, wet, stiff clay nodules and lenses



Project No.: 0494255 Date Drilled: 2/5/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.2/4.0	12.02	0.65	30-32	30.0-30.6': clayey SILT: gray (2.5Y, 4/1), soft, wet, stiff clay nodules and lenses 30.6-31.2': silty CLAY: gray (2.5Y, 4/1), soft, damp, plastic 31.2-32.0': No recovery
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-24B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788585, 3301640

Surface Elev.: 2.28 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/5/2019 Date Completed: 2/5/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Aaron Jones Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.4/4.0	2.69	0.9	0-4	0.0-2.4': CLAY: gray (7.5YR, 4/1), stiff, moist, with dark brown streaks 2.4-4.0': No recovery
				6.01	1.75		
5			2.2/4.0	5.88	1.0	4-8	4.0-4.9': CLAY: gray (7.5YR, 4/1) with brown/brown-red and dark gray streaks, stiff, moist 4.9-6.2': clayey SILT: red-brown, soft, damp 6.2-8.0': No recovery
				2.34	0.5		
10			3.0/4.0	12.51	0.6	8-12	8.0-11.0': SILT: dark gray (7.5YR, 3/1), stiff, wet 11.0-12.0': No recovery
				OR	1.0		
15			2.7/4.0	0.77	0.1	12-16	12.0-13.3': silty CLAY: gray with red/brown streaks, soft, very damp 13.3-14.7': clayey SILT: gray, wet, with clayey nodules 14.7-16.0': No recovery
				4.41	1.0		
20			3.7/4.0	OR	0.1	16-20	16.0-18.2': SILT: gray (2.5Y, 3/1), very soft, very wet 18.2-19.7': SILT: gray (2.5Y, 3/1), stiff, damp 19.7-20.0': No recovery
				13.09	1.6		
25			2.2/4.0	11.17	0.1	24-28	24.0-25.5': silty CLAY: (2.5Y, 4/1), soft, damp 25.5-26.2': clayey SILT: (2.5Y, 4/1), soft, wet 26.2-28.0': No recovery
				4.49	0.25		
30			3.2/4.0	14.17	0.0	28-30	28.0-30.0': clayey SILT: gray (2.5Y, 4/1), soft, wet, stiff clay nodules and lenses
				0.0/4.0	NA	NA	20-24



Project No.: 0494255 Date Drilled: 2/5/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.2/4.0	12.02	0.65	30-32	30.0-30.6': clayey SILT: gray (2.5Y, 4/1), soft, wet, stiff clay nodules and lenses 30.6-31.2': silty CLAY: gray (2.5Y, 4/1), soft, damp, plastic 31.2-32.0': No recovery
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-25

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 788154, 3300072

Surface Elev.: NM Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/5/2019 Date Completed: 2/5/2019 Well Dia./Materials: NA

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

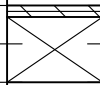
Logged by: Aaron Jones Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	0.58	0.5	0-4	0.0-2.5': silty CLAY: black/brown (2.5Y, 3/2), hard, moist, o-horizon dominant first 0.1', rock/pebble lens at 1.6', sand lens at 2.0-2.2' and 2.3-2.4', alternating rocks throughout 2.5-4.0': No recovery
				0.52	2.4		
5			2.6/4.0	0.75	4.0	4-8	4.0-4.7': CLAY: with asphalt, rock heavy lens at 4.4-4.7' 4.7-6.6': CLAY: light gray (2.5Y, 5/2), stiff at top to soft at bottom, moist 6.6-8.0': No recovery
				2.38	1.0		
10			1.0/4.0	2.17	1.0	8-12	8.0-9.0': CLAY: light gray (2.5Y, 5/2), stiff, moist, red stains 9.0-12.0': No recovery
				2.36			
15			2.3/4.0	2.01	0.0	12-16	12.0-14.3': CLAY: (2.5Y, 4/1), soft, damp, thick, plastic, organics at 13.9-14.0' 14.3-16.0': No recovery
				NA	0.25		
20			2.6/4.0	2.0	0.1	16-20	16.0-18.6': CLAY: (2.5Y, 4/1), very soft, damp, plastic, organics at 17.1' 18.6-20.0': No recovery
				2.78	0.1		
25			2.7/4.0	4.47	0.5	20-24	20.0-20.4': CLAY: with wood chips and organics at 20.4' 20.4-22.4': silty CLAY: soft, damp 22.4-22.7': SILT and SAND: very fine grained, stiff, saturated 22.7-24.0': No recovery
				4.38			
30	0.0/4.0	NA	NA	24-28	24.0-28.0': Not sampled		
	2.3/4.0	12.09	0.25	28-30	28.0-30.0': CLAY to silty CLAY: gray (2.5Y, 4/1), soft, damp, shell lens at 29.1-29.25'		





Project No.: 0494255 Date Drilled: 2/5/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			2.3/4.0	13.63	0.0	30-32	30.0-30.3': CLAY to silty CLAY: gray (2.5Y, 4/1), soft, damp, shell lens at 29.1-29.25' 30.3-32.0': No recovery
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-26

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789081, 3302625

Surface Elev.: 2.25 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/6/2019 Date Completed: 2/6/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0							
0-4			2.0/4.0	9.02 14.78	1.5 1.0	0-4	0.0-0.3': Vegetation 0.3-2.0': CLAY: gray/brown, stiff, damp 2.0-4.0': No recovery
5			2.7/4.0	16.31 10.16	1.0 0.5	4-8	4.0-5.3': CLAY: gray/brown, stiff, damp, black stain at 5.0-5.1' 5.3-6.7': CLAY: gray/brown, medium to soft, damp, no odor 6.7-8.0': No recovery
10			2.0/4.0	7.74 4.15	0.5 0.5	8-12	8.0-8.5': silty CLAY: gray/brown, damp 8.5-9.1': silty CLAY: gray 9.1-10.0': SILT: gray, wet, no odor 10.0-12.0': No recovery
15			2.6/4.0	6.92 9.64	0.25 0.25	12-16	12.0-13.9': SILT: gray, medium to soft, saturated 13.9-14.1': CLAY 14.1-14.6': SILT: gray, medium to soft, wet, no odor 14.6-16.0': No recovery
20			3.6/4.0	14.60 OR	0.75 0.5	16-20	16.0-17.3': SILT: gray, medium to soft, saturated 17.3-17.4': CLAY: soft 17.4-19.6': SILT: gray, medium to soft, saturated, no odor 19.6-20.0': No recovery
25			2.9/4.0	OR OR	0.25 0.5	20-24	20.0-22.9': SILT: gray, soft to medium, saturated, no odor, clay lens at 20.6' and 21.2-21.3' 22.9-24.0': No recovery
30			3.6/4.0	OR 14.38	0.25 0.25	24-28	24.0-26.4': SILT: gray, medium to soft, saturated 26.4-27.4': silty CLAY: medium to soft, damp, no odor, medium to soft silty sand at 27.4' 27.4-27.6': silty SAND: medium to soft, no odor 27.6-28.0': No recovery
30			0.0/4.0	NA	NA	28-30	28.0-30.0': No recovery



# Environmental Resources Management

Boring/Well No.: BC-26

Project No.: 0494255 Date Drilled: 2/6/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30	X		0.0/4.0	NA	NA	30-32	30.0-32.0': No recovery
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-27A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789126, 3302547

Surface Elev.: 2.24 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 2/6/2019 Date Completed: 2/7/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push – Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0							0.0–0.1': Vegetation
			1.0/4.0	2.61	0.25	0–4	0.1–1.0': CLAY: gray/brown, medium to soft, damp, no odor
				3.11	0.5		1.0–4.0': No recovery
5			2.9/4.0	4.15	0.5	4–8	4.0–5.2': CLAY: brown/gray, medium to soft
				5.61	0.5		5.2–6.1': CLAY: gray/brown, wood at 1.9' and 2.1'
							6.1–6.9': CLAY: brown/gray, medium to soft, damp, no odor
							6.9–8.0': No recovery
10			1.8/4.0	5.86	0.5	8–12	8.0–9.0': CLAY: gray/brown, medium to soft, damp
				6.32	0.5		9.0–9.8': SILT: gray, medium to soft, wet, no odor
							9.8–12.0': No recovery
15			2.2/4.0	8.05	0.25	12–16	12.0–14.2': SILT: gray, medium to soft, wet to saturated, no odor
				18.62	0.25		14.2–16.0': No recovery
20			2.8/4.0	OR	0.25	16–20	16.0–17.0': silty CLAY: gray, medium to soft, wet
				OR	0.5		17.0–18.8': CLAY: gray, medium soft, damp, no odor
							18.8–20.0': No recovery
25			2.6/4.0	OR	NA	20–24	20.0–20.7': silty CLAY: gray, very soft, wet
				14.08	0.5		20.7–20.9': SILT: shell and sand
							20.9–21.9': CLAY: gray/black, medium to soft, damp
							21.9–22.6': silty CLAY: gray, medium soft, damp, no odor
							22.6–24.0': No recovery
30			2.9/4.0	8.5	0.5	24–28	24.0–25.3': SILT: gray, medium to soft, saturated
				3.64	1.5		25.3–25.4': CLAY: gray, medium soft
							25.4–26.2': SILT: gray, medium to soft
							26.2–26.8': SILT and SAND: gray/black
							26.8–26.9': CLAY and SILT: gray, medium soft to stiff, no odor
							26.9–28.0': No recovery



# Environmental Resources Management

Boring/Well No.: BC-27B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789126, 3302547

Surface Elev.: 2.24 ft. Boring T.D.: 28 ft. Boring Dia.: 3.25 inch

Date Started: 2/6/2019 Date Completed: 2/7/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0							0.0-0.1': Vegetation
			1.0/4.0	2.61	0.25	0-4	0.1-1.0': CLAY: gray/brown, medium to soft, damp, no odor
				3.11	0.5		1.0-4.0': No recovery
5			2.9/4.0	4.15	0.5	4-8	4.0-5.2': CLAY: brown/gray, medium to soft
				5.61	0.5		5.2-6.1': CLAY: gray/brown, wood at 1.9' and 2.1'
							6.1-6.9': CLAY: brown/gray, medium to soft, damp, no odor
							6.9-8.0': No recovery
10			1.8/4.0	5.86	0.5	8-12	8.0-9.0': CLAY: gray/brown, medium to soft, damp
				6.32	0.5		9.0-9.8': SILT: gray, medium to soft, wet, no odor
							9.8-12.0': No recovery
15			2.2/4.0	8.05	0.25	12-16	12.0-14.2': SILT: gray, medium to soft, wet to saturated, no odor
				18.62	0.25		14.2-16.0': No recovery
20			2.8/4.0	OR	0.25	16-20	16.0-17.0': silty CLAY: gray, medium to soft, wet
				OR	0.5		17.0-18.8': CLAY: gray, medium soft, damp, no odor
							18.8-20.0': No recovery
25			2.6/4.0	OR	NA	20-24	20.0-20.7': silty CLAY: gray, very soft, wet
				14.08	0.5		20.7-20.9': SILT: shell and sand
							20.9-21.9': CLAY: gray/black, medium to soft, damp
							21.9-22.6': silty CLAY: gray, medium soft, damp, no odor
							22.6-24.0': No recovery
30			2.9/4.0	8.5	0.5	24-28	24.0-25.3': SILT: gray, medium to soft, saturated
				3.64	1.5		25.3-25.4': CLAY: gray, medium soft
							25.4-26.2': SILT: gray, medium to soft
							26.2-26.8': SILT and SAND: gray/black
							26.8-26.9': CLAY and SILT: gray, medium soft to stiff, no odor
							26.9-28.0': No recovery



# Environmental Resources Management

Boring/Well No.: BC-28A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789070, 3302019

Surface Elev.: 0.66 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/7/2019 Date Completed: 2/7/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0							
0.0-0.3'				3.18	0.5	0-4	0.0-0.3': Vegetation
0.3-1.3'			2.3/4.0	11.89	0.5		0.3-1.3': CLAY: gray/brown, medium to soft, damp
1.3-2.3'							1.3-2.3': CLAY: gray/brown, medium to soft, wet
2.3-4.0'							2.3-4.0': No recovery
4.0-5.3'			2.8/4.0	14.97	NA	4-8	4.0-5.3': CLAY: gray, stiff, dry
5.3-5.7'				19.32			5.3-5.7': CLAY: gray/black, stiff, dry, no odor, organics
5.7-6.8'							5.7-6.8': CLAY: gray/black, medium to soft, damp
6.8-8.0'							6.8-8.0': No recovery
8.0-10.2'			2.2/4.0	OR	0.25	8-12	8.0-10.2': CLAY: gray, medium soft, damp, no odor
10.2-12.0'				18.15	0.25		10.2-12.0': No recovery
12.0-13.9'			3.3/4.0	13.58	0.25	12-16	12.0-13.9': SILT and CLAY: gray, soft, wet
13.9-15.3'				10.59	0.5		13.9-15.3': silty CLAY: gray, medium to soft, damp, no odor
15.3-16.0'							15.3-16.0': No recovery
16.0-17.1'			2.4/4.0	9.40	0.5	16-20	16.0-17.1': silty CLAY: gray, medium to soft, damp
17.1-18.1'				4.67	0.5		17.1-18.1': silty CLAY: gray/black, medium to soft, shells
18.1-18.4'							18.1-18.4': SILT and CLAY: gray, medium to soft, damp, no odor
18.4-20.0'							18.4-20.0': No recovery
20.0-21.3'			3.2/4.0	4.18	0.0	20-24	20.0-21.3': CLAY and SILT: gray, soft, damp
21.3-23.2'				1.80	0.5		21.3-23.2': SILT: gray, medium to soft, damp, no odor
23.2-24.0'							23.2-24.0': No recovery
24.0-26.3'			3.7/4.0	2.02	NA	24-28	24.0-26.3': SILT: gray, very soft, saturated
26.3-26.7'				0.90			26.3-26.7': SILT: gray, medium to soft, wet
26.7-27.7'							26.7-27.7': SILT: gray, medium to soft, damp, no odor
27.7-28.0'							27.7-28.0': No recovery
28.0-30.0'			3.6/4.0	1.80	NA	28-30	28.0-30.0': SILT: gray, medium to soft, saturated, no odor
30							



# Environmental Resources Management

Boring/Well No.: BC-28A

Project No.: 0494255 Date Drilled: 2/7/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.6/4.0	1.54	NA	30-32	30.0-31.6': SILT: gray, medium to soft, saturated, no odor 31.6-32.0': No recovery
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-28B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 789070, 3302019

Surface Elev.: 0.66 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/7/2019 Date Completed: 2/7/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	POCKET-PENETROMETER (kg/cm <sup>3</sup> )	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0							
			2.3/4.0	3.18	0.5	0-4	0.0-0.3': Vegetation 0.3-1.3': CLAY: gray/brown, medium to soft, damp 1.3-2.3': CLAY: gray/brown, medium to soft, wet 2.3-4.0': No recovery
				11.89	0.5		
5			2.8/4.0	14.97	NA	4-8	4.0-5.3': CLAY: gray, stiff, dry 5.3-5.7': CLAY: gray/black, stiff, dry, no odor, organics 5.7-6.8': CLAY: gray/black, medium to soft, damp 6.8-8.0': No recovery
				19.32			
10			2.2/4.0	OR	0.25	8-12	8.0-10.2': CLAY: gray, medium soft, damp, no odor 10.2-12.0': No recovery
				18.15	0.25		
15			3.3/4.0	13.58	0.25	12-16	12.0-13.9': SILT and CLAY: gray, soft, wet 13.9-15.3': silty CLAY: gray, medium to soft, damp, no odor 15.3-16.0': No recovery
				10.59	0.5		
20			2.4/4.0	9.40	0.5	16-20	16.0-17.1': silty CLAY: gray, medium to soft, damp 17.1-18.1': silty CLAY: gray/black, medium to soft, shells 18.1-18.4': SILT and CLAY: gray, medium to soft, damp, no odor 18.4-20.0': No recovery
				4.67	0.5		
25			3.2/4.0	4.18	0.0	20-24	20.0-21.3': CLAY and SILT: gray, soft, damp 21.3-23.2': SILT: gray, medium to soft, damp, no odor 23.2-24.0': No recovery
				1.80	0.5		
30			3.7/4.0	2.02	NA	24-28	24.0-26.3': SILT: gray, very soft, saturated 26.3-26.7': SILT: gray, medium to soft, wet 26.7-27.7': SILT: gray, medium to soft, damp, no odor 27.7-28.0': No recovery
				0.90			
			3.6/4.0	1.80	NA	28-30	28.0-30.0': SILT: gray, medium to soft, saturated, no odor





# Environmental Resources Management

Boring/Well No.: BC-28B

Project No.: 0494255 Date Drilled: 2/7/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.6/4.0	1.54	NA	30-32	30.0-31.6': SILT: gray, medium to soft, saturated, no odor 31.6-32.0': No recovery
35							
40							
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: BC-29A

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 787943, 3300938

Surface Elev.: -2.95 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/13/2019 Date Completed: 2/13/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe

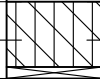
DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.1/4.0	0.04	0-4	0.0-0.4': CLAY: brown, dry, with vegetation 0.4-2.1': SAND: coarse, brown, medium soft, damp, no odor 2.1-4.0': No recovery
				0.07		
5			1.6/4.0	0.39		
				1.25		
10			2.0/4.0	1.41	8-12	8.0-10.0': SILT: gray, medium to soft, wet 10.0-12.0': No recovery
				1.99		
15			3.2/4.0	4.97		
				12.64		
20			2.6/4.0	6.21	16-20	16.0-17.1': SILT: gray, soft, wet 17.1-18.5': CLAY and SILT: gray, medium to soft, damp 18.5-18.6': SILT: gray, medium to soft, damp 18.6-20.0': No recovery
				15.15		
25			2.0/4.0	15.83		
				14.59		
30			2.9/4.0	14.39	24-28	24.0-25.7': SILT: gray, medium to soft, damp 25.7-26.5': SILT: gray, medium to soft, wet to saturated 26.5-26.9': SILT and CLAY: gray, medium to soft, damp 26.9-28.0': No recovery
				15.34		
			2.7/4.0	19.21		



# Environmental Resources Management

Boring/Well No.: BC-29A

Project No.: 0494255 Date Drilled: 2/13/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			2.7/4.0	15.72	30-32	30.0-30.3': CLAY and SILT: gray, medium to soft, damp 30.3-30.7': SILT and CLAY: gray, medium to soft, wet 30.7-32.0': No recovery
35						
40						
45						
50						
55						
60						
65						



# Environmental Resources Management

Boring/Well No.: BC-29B

Project: Hero Lands Company, LLC Project No.: 0494255

Location: Belle Chasse, Plaquemines Parish, Louisiana Coordinates: UTM 15R 787943, 3300938

Surface Elev.: -2.95 ft. Boring T.D.: 32 ft. Boring Dia.: 3.25 inch

Date Started: 2/13/2019 Date Completed: 2/13/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Jay Culpepper

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Ed Graham Soil Sample Method: Direct Push - Geoprobe


DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0				0.04	0-4	0.0-0.4': CLAY: brown, dry, with vegetation 0.4-2.1': SAND: coarse, brown, medium soft, damp, no odor 2.1-4.0': No recovery
			2.1/4.0	0.07		
5			1.6/4.0	0.39	4-8	4.0-4.4': SILT: gray, soft, wet 4.4-5.5': silty CLAY: gray, stiff, damp 5.5-5.6': SILT: gray, stiff, damp 5.6-8.0': No recovery
				1.25		
10			2.0/4.0	1.41	8-12	8.0-10.0': SILT: gray, medium to soft, wet 10.0-12.0': No recovery
				1.99		
15			3.2/4.0	4.97	12-16	12.0-12.9': CLAY and SILT: gray, soft, wet 12.9-15.2': CLAY and SILT: gray, medium to soft, damp 15.2-16.0': No recovery
				12.64		
20			2.6/4.0	6.21	16-20	16.0-17.1': SILT: gray, soft, wet 17.1-18.5': CLAY and SILT: gray, medium to soft, damp 18.5-18.6': SILT: gray, medium to soft, damp 18.6-20.0': No recovery
				15.15		
25			2.0/4.0	15.83	20-24	20.0-21.1': CLAY and SILT: gray, medium to soft, damp 21.1-22.0': silty CLAY: gray, medium to soft, damp 22.0-24.0': No recovery
				14.59		
30			2.9/4.0	14.39	24-28	24.0-25.7': SILT: gray, medium to soft, damp 25.7-26.5': SILT: gray, medium to soft, wet to saturated 26.5-26.9': SILT and CLAY: gray, medium to soft, damp 26.9-28.0': No recovery
				15.34		
			2.7/4.0	19.21	28-30	28.0-30.0': CLAY and SILT: gray, medium to soft, damp



# Environmental Resources Management

Boring/Well No.: BC-29B

Project No.: 0494255 Date Drilled: 2/13/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			2.7/4.0	15.72	30-32	30.0-30.3': CLAY and SILT: gray, medium to soft, damp 30.3-30.7': SILT and CLAY: gray, medium to soft, wet 30.7-32.0': No recovery
35						
40						
45						
50						
55						
60						
65						