

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-1A

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644117, 3295247

Surface Elev.: NM

Boring T.D.: 24 ft.

Boring Dia.: 3-1/4"

Date Started: 1/8/2019

Date Completed: 1/8/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	0.1	0-4	0-2' CLAY, some silt, damp, shell fragments at 0.6', Fe nodules, 10YR 4/1, dark gray 2-4' No Recovery
			NA			
5			2.0/4.0	0.2	4-8	4-5.5' SILT, semi dense, moist to wet, iron staining 5.5-6' CLAY, some silt, medium soft, damp, iron staining, 2.5Y 5/2, grayish brown 6-8' No Recovery
			NA			
10			1.5/4.0	0.3	8-12	8-9.5' Silty CLAY, medium soft, damp, iron staining, 2.5Y 5/2, grayish brown 9.5-12' No Recovery
			NA			
15			3.0/4.0	0.3	12-16	12-15' CLAY, medium soft, damp, some iron staining at top, Gley 1 3/N, very dark gray 15-16' No Recovery
			0.2			
20			2.7/4.0	0.2	16-20	16-17' CLAY, medium soft, damp, iron staining, Gley 1 5/5GY greenish gray 17-17.6' SILT, semi dense, moist, iron staining, Gley 1 5/5GY greenish gray 17.6-18.1' CLAY, medium soft, damp, iron staining, Gley 1 5/5GY greenish gray 18.1-18.7' SILT, semi dense, moist, iron staining, Gley 1 5/5GY greenish gray 18.7-20' No Recovery
			0			
25			3.4/4.0	0	20-24	20-22' SILT, semi dense, moist to wet, iron staining 22-23.4' CLAY, some silt, medium soft, damp, iron staining, 5Y 5/2, olive gray 23.4-24' No Recovery
			0			
30			3.3/4.0	0	24-28	24-27.3' Silty CLAY, medium soft, damp, Fe nodules, 2.5Y 6/1, gray 27.3-28' No Recovery
			0			
			3.8/4.0	0	28-32	28-31.8' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/3, light olive brown 31.8-32' No Recovery

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-1A

Project No.: 07-184      Date Drilled: 1/8/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.8/4.0	0	28-32	28-31.8' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/3, light olive brown 31.8-32' No Recovery
35			4.0/4.0	0	32-36	32-36' Silty CLAY, soft, moist, iron staining, 2.5Y 5/3, light olive brown
				0		
40			3.6/4.0	0	36-40	36-39.6' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/3, light olive brown 39.6-40' No Recovery
				0		
45			2.6/4.0	0	40-44	40-42.6' Silty CLAY, medium soft, damp, Fe nodules, 2.5Y 6/2, light brownish gray 42.6-44' No Recovery
				NA		
50			4.0/4.0	0	44-48	44-48' CLAY, some silt, dry, medium soft/ stiff, iron staining, Fe/ Mn nodules, 10YR 5/3, brown
				0		
55			4.0/4.0	0	48-52	48-52' CLAY, some silt, dry, stiff, iron staining, Fe/ Mn nodules, 10YR 5/3, brown
				0		
60			3.4/4.0	0	52-56	52-55.4' Silty CLAY, medium soft/ stiff, iron staining, Fe/ Mn nodules, silt at bottom, 10YR 6/3, Pale brown 55.4-56' No Recovery
		0				
65	4.0/4.0	0	56-60	56-60' SILT, wet/ saturated, semi dense/ dense, iron staining, 10YR 5/3, brown		
		0				
	3.4/4.0	0	60-64	60-63.4' SILT, saturated, semi dense, 10YR 5/3 brown 63.4-64' No Recovery		
		0				
			64-66		64-66' Not logged	

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-1B

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644115, 3295249

Surface Elev.: NM

Boring T.D.: 66 ft.

Boring Dia.: 0-40': 3.25"; 40-66': 2.25"

Date Started: 1/8/2019

Date Completed: 1/8/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylan White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	0.1	0-4	0-2' CLAY, some silt, damp, shell fragments at 0.6', Fe nodules, 10YR 4/1, dark gray 2-4' No Recovery
			NA			
5			2.0/4.0	0.2	4-8	4-5.5' SILT, semi dense, moist to wet, iron staining 5.5-6' CLAY, some silt, medium soft, damp, iron staining, 2.5Y 5/2, grayish brown 6-8' No Recovery
			NA			
10			1.5/4.0	0.3	8-12	8-9.5' Silty CLAY, medium soft, damp, iron staining, 2.5Y 5/2, grayish brown 9.5-12' No Recovery
			NA			
15			3.0/4.0	0.3	12-16	12-15' CLAY, medium soft, damp, some iron staining at top, Gley 1 3/N, very dark gray 15-16' No Recovery
			0.2			
20			2.7/4.0	0.2	16-20	16-17' CLAY, medium soft, damp, iron staining, Gley 1 5/5GY greenish gray 17-17.6' SILT, semi dense, moist, iron staining, Gley 1 5/5GY greenish gray 17.6-18.1' CLAY, medium soft, damp, iron staining, Gley 1 5/5GY greenish gray 18.1-18.7' SILT, semi dense, moist, iron staining, Gley 1 5/5GY greenish gray 18.7-20' No Recovery
			0			
25			3.4/4.0	0	20-24	20-22' SILT, semi dense, moist to wet, iron staining 22-23.4' CLAY, some silt, medium soft, damp, iron staining, 5Y 5/2, olive gray 23.4-24' No Recovery
			0			
30			3.3/4.0	0	24-28	24-27.3' Silty CLAY, medium soft, damp, Fe nodules, 2.5Y 6/1, gray 27.3-28' No Recovery
			0			
			3.8/4.0	0	28-32	28-31.8' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/3, light olive brown 31.8-32' No Recovery

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-1B

Project No.: 07-184      Date Drilled: 1/8/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.8/4.0	0	28-32	28-31.8' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/3, light olive brown 31.8-32' No Recovery
			4.0/4.0	0	32-36	32-36' Silty CLAY, soft, moist, iron staining, 2.5Y 5/3, light olive brown
35			0			
			3.6/4.0	0	36-40	36-39.6' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/3, light olive brown 39.6-40' No Recovery
40			0			
			2.6/4.0	0	40-44	40-42.6' Silty CLAY, medium soft, damp, Fe nodules, 2.5Y 6/2, light brownish gray 42.6-44' No Recovery
			NA			
45			4.0/4.0	0	44-48	44-48' CLAY, some silt, dry, medium soft/ stiff, iron staining, Fe/ Mn nodules, 10YR 5/3, brown
			0			
50			4.0/4.0	0	48-52	48-52' CLAY, some silt, dry, stiff, iron staining, Fe/ Mn nodules, 10YR 5/3, brown
			0			
			3.4/4.0	0	52-56	52-55.4' Silty CLAY, medium soft/ stiff, iron staining, Fe/ Mn nodules, silt at bottom, 10YR 6/3, Pale brown 55.4-56' No Recovery
55	0					
	4.0/4.0	0	56-60	56-60' SILT, wet/ saturated, semi dense/ dense, iron staining, 10YR 5/3, brown		
60	0					
	3.4/4.0	0	60-64	60-63.4' SILT, saturated, semi dense, 10YR 5/3 brown 63.4-64' No Recovery		
	0					
65					64-66' Not logged	

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.: EN-2

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644104, 3295308

Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 2-1/4"

Date Started: 1/9/2019 Date Completed: 1/9/2019 Well Dia./Materials: NA

Drilling Company: ICON Driller: Dylon White

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	0.2	0-4	0-2.5' CLAY, medium soft, damp, iron staining, organics at top, 10YR 4/1, dark gray 2.5-4' No Recovery
				NA		
5			2.0/4.0	0.2	4-8	4-6' CLAY, medium soft, damp, iron staining, 10YR 4/1, dark gray 6-8' No Recovery
				NA		
10			2.0/4.0	0.3	8-12	8-10' CLAY, medium soft, damp, iron staining, 10YR 4/1, dark gray 10-12' No Recovery
				NA		
15			3.2/4.0	0.4	12-16	12-15.2' Silty CLAY, medium soft, damp, Clayey SILT at bottom, gley 1 4/N, dark gray 15.2-16' No Recovery
				0.5		
20			3.4/4.0	0.2	16-20	16-19.4' Clayey SILT, soft, moist, some iron staining, clay lens at 17.2- 17.5', Gley 1 4/10Y, dark greenish gray 19.4-20' No Recovery
				0.1		
25			2.3/4.0	0.1	20-24	20-22.3' Silty CLAY, soft/ medium soft, damp, some iron staining, gray at top, brown at bottom 22.3-24' No Recovery
30				NA		

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-3

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644082, 3295331

Surface Elev.: NM

Boring T.D.: 72 ft.

Boring Dia.: 0-8': 3.25"; 8-72': 2.25"

Date Started: 1/9/2019

Date Completed: 1/9/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/4.0	0.5	0-4	0-2' CLAY, medium soft, damp, some Fe nodules, organics at top, 2.5Y 5/1, gray 2-4' No Recovery
				NA		
5			3.0/4.0	0.2	4-8	4-7' CLAY, medium soft, damp, Fe/ Mn nodules, 2.5Y 5/1, gray 7-8' No Recovery
				0.2		
10			2.0/4.0	0.2	8-12	8-10' CLAY, some silt, medium soft, damp, Fe/ Mn nodules, 2.5Y 5/1, gray 10-12' No Recovery
				NA		
15			2.5/4.0	0.6	12-16	12-12.5' CLAY, medium soft, damp, Fe/ Mn nodules, 2.5Y 5/1, gray 12.5-14.5' Clayey SILT, soft, moist, 5Y 5/1, gray 14.5-16' No Recovery
				NA		
20			3.8/4.0	0.3	16-20	16-19.8' Clayey SILT, soft, moist/ wet, 5Y 5/1, gray 19.8-20' No Recovery
				0.3		
25			2.3/4.0	NA	20-24	20-22.3' Silty CLAY, medium soft, damp, Mn staining, Fe nodules, 2.5Y 4/1, dark gray 22.3-24' No Recovery
				NA		
30			2.5/4.0	NA	24-28	24-26.5' Silty CLAY, medium soft, damp, some iron staining, Fe nodules, 2.5Y 6/2, light brownish gray 26.5-28' No Recovery
				NA		
			4.0/4.0	NA	28-32	28-32' Silty CLAY, soft, damp/ moist, iron staining, 2.5Y 6/2, light brownish gray

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-3

Project No.: 07-184      Date Drilled: 1/8/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			4.0/4.0	NA	28-32	28-32' Silty CLAY, soft, damp/ moist, iron staining, 2.5Y 6/2, light brownish gray
35			4.0/4.0	NA	32-36	32-36' Silty CLAY, medium soft, damp/ moist, iron staining, 2.5Y 6/2, light brownish gray
				NA		
40			3.8/4.0	NA	36-40	36-39.8' Silty CLAY, medium soft, moist to damp, some Fe nodules, 2.5Y6/2, light brownish gray 39.8-40' No Recovery
				NA		
45			2.4/4.0	NA	40-44	40-40.4' Clayey SILT, very soft, saturated 40.4-42.4' Silty CLAY, medium soft, Fe nodules, damp, 2.5Y 5/2, grayish brown 42.4-44' No Recovery
				NA		
50			4.0/4.0	NA	44-48	44-48' CLAY, some silt, medium soft to stiff, damp, iron staining, some Mn nodules, 2.5Y 6/1, gray
				NA		
55			4.0/4.0	NA	48-52	48-52' CLAY, stiff, damp to dry, iron staining, some Mn nodules, soft Silty CLAY lens at 50.5-51.3', 2.5Y 6/1, gray
				NA		
60			4.0/4.0	NA	52-56	52-56' Silty CLAY, medium soft, damp, Fe/ Mn nodules, 2.5Y 6/2, light brownish gray
		NA				
65	4.0/4.0	NA	56-60	56-60' Silty CLAY, medium soft, damp, stiff at bottom, iron staining, 2.5Y 6/2, light brownish gray		
		NA				
	4.0/4.0	NA	60-64	60-64' CLAY, stiff, damp, some iron staining, Gley 1 7/5GY light greenish gray		
		NA				
	4.0/4.0	NA	64-68	64-68' Silty CLAY, medium soft to stiff, damp, some iron staining, silt at bottom, Gley 1 7/10Y, light greenish gray		

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.: EN-3

Project No.: 07-184

Date Drilled: 1/8/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
65			4.0/4.0	NA	64-68	64-68' Silty CLAY, medium soft to stiff, damp, some iron staining, silt at bottom, Gley 1 7/10Y, light greenish gray
NA						
70			3.5/4.0	NA	68-72	68-69.5' SILT, loose to semi dense, saturated 69.5-71.5' CLAY, stiff, damp, iron staining, Mn nodules, 10YR 5/4, yellowish brown 71.5-72' No Recovery
				NA		
75						
80						
85						
90						
95						
100						



# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-4A

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 643902, 3295275

Surface Elev.: NM

Boring T.D.: 25 ft.

Boring Dia.: 0-12': 3.25"; 12-25': 2.25"

Date Started: 1/10/2019

Date Completed: 1/10/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.8/4.0	0.2	0-4	0-1.8' CLAY, some silt, medium soft, damp, Fe nodules, 5Y 5/1, gray 1.8-4' No Recovery
			NA			
5			2.0/4.0	3.9	4-8	4-6' CLAY, some silt, medium soft, damp, Fe nodules, 5Y 5/1, gray 6-8' No Recovery
			NA			
10			1.2/4.0	34.4	8-12	8-9.2' CLAY, soft to medium soft, damp, odor, 5Y 3/1, very dark gray 9.2-12' No Recovery
			NA			
15			1.4/4.0	76.2	12-16	12-13.4' CLAY, soft to medium soft, damp, odor, 5Y 3/1, very dark gray 13.4-16' No Recovery
			NA			
20			3.6/4.0	155	16-20	16-18' Silty CLAY, soft, moist, black staining, odor 18-19.6' Clayey SILT to SILT, semi dense, wet, slight odor, 5Y 3/1, very dark gray 19.6-20' No Recovery
			5.4			
25			3.6/4.0	2.2	20-24	20-23.6' SILT, semi dense, saturated, no odor, Gley 1 3/1, very dark gray 23.6-24' No Recovery
			1.9			
30			3.7/4.0	4.3	24-28	24-27.7' SILT, semi dense, saturated, no odor, Gley 1 3/1, very dark gray 27.7-28' No Recovery
			2.8			
			3.6/4.0	0.9	28-32	28-31.6' SILT, semi dense, saturated, no odor, Clayey SILT at bottom, Gley 1 3/1, very dark gray

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-4A

Project No.: 07-184      Date Drilled: 1/10/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.6/4.0	1.2	28-32	28-31.6' SILT, semi dense, saturated, no odor, Clayey SILT at bottom, Gley 1 3/1, very dark gray 31.6-32' No Recovery
			4.0/4.0	1.0	32-36	32-36' Clayey SILT to Silty CLAY, soft to medium soft, moist/ wet to damp, Gley 1 3/1, very dark gray to Gley 1 4/1, dark gray
35				0.6		
			4.0/4.0	0.6	36-40	36-40' Silty CLAY, medium soft, damp, Gley 1 4/1, dark gray
40				0.9		
			3.5/4.0	1.2	40-44	40-43.5' CLAY, stiff, damp, some small silty lenses throughout, moist silty lense at 41.8-42.3', 10YR 5/1, gray 43.5-44' No Recovery
				0.6		
45			4.0/4.0	0.8	44-48	44-48' CLAY, stiff, damp to dry, iron staining, calcite nodules at 47.1-47.6', Fe/ Mn nodules throughout, 10YR 6/1, gray
				0.5		
50						
55						
60						
65						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-4B

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 643903, 3295271

Surface Elev.: NM

Boring T.D.: 48 ft.

Boring Dia.: 0-16': 3.25"; 16-48': 2.25"

Date Started: 1/10/2019

Date Completed: 1/10/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			1.8/4.0	0.2	0-4	0-1.8' CLAY, some silt, medium soft, damp, Fe nodules, 5Y 5/1, gray 1.8-4' No Recovery
				NA		
5			2.0/4.0	3.9	4-8	4-6' CLAY, some silt, medium soft, damp, Fe nodules, 5Y 5/1, gray 6-8' No Recovery
				NA		
10			1.2/4.0	34.4	8-12	8-9.2' CLAY, soft to medium soft, damp, odor, 5Y 3/1, very dark gray 9.2-12' No Recovery
				NA		
15			1.4/4.0	76.2	12-16	12-13.4' CLAY, soft to medium soft, damp, odor, 5Y 3/1, very dark gray 13.4-16' No Recovery
				NA		
20			3.6/4.0	155	16-20	16-18' Silty CLAY, soft, moist, black staining, odor 18-19.6' Clayey SILT to SILT, semi dense, wet, slight odor, 5Y 3/1, very dark gray 19.6-20' No Recovery
				5.4		
25			3.6/4.0	2.2	20-24	20-23.6' SILT, semi dense, saturated, no odor, Gley 1 3/1, very dark gray 23.6-24' No Recovery
				1.9		
30	3.7/4.0	4.3	24-28	24-27.7' SILT, semi dense, saturated, no odor, Gley 1 3/1, very dark gray 27.7-28' No Recovery		
		2.8				
	3.6/4.0	0.9	28-32	28-31.6' SILT, semi dense, saturated, no odor, Clayey SILT at bottom, Gley 1 3/1, very dark gray		

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-4B

Project No.: 07-184      Date Drilled: 1/10/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.6/4.0	1.2	28-32	28-31.6' SILT, semi dense, saturated, no odor, Clayey SILT at bottom, Gley 1 3/1, very dark gray 31.6-32' No Recovery
			4.0/4.0	1.0	32-36	32-36' Clayey SILT to Silty CLAY, soft to medium soft, moist/ wet to damp, Gley 1 3/1, very dark gray to Gley 1 4/1, dark gray
				0.6		
35			4.0/4.0	0.6	36-40	36-40' Silty CLAY, medium soft, damp, Gley 1 4/1, dark gray
				0.9		
40	3.5/4.0	1.2	40-44	40-43.5' CLAY, stiff, damp, some small silty lenses throughout, moist silty lense at 41.8-42.3', 10YR 5/1, gray 43.5-44' No Recovery		
		0.6				
45	4.0/4.0	0.8	44-48	44-48' CLAY, stiff, damp to dry, iron staining, calcite nodules at 47.1-47.6', Fe/ Mn nodules throughout, 10YR 6/1, gray		
		0.5				
50						
55						
60						
65						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-5

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 643991, 3295372

Surface Elev.: NM

Boring T.D.: 40 ft.

Boring Dia.: 2-1/4"

Date Started: 1/11/2019

Date Completed: 1/11/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.7/4.0	0.1	0-4	0-2.7' CLAY, medium soft/ stiff, damp, iron staining, 2.5Y 3/1, very dark gray 2.7-4' No Recovery
				0.1		
5			3.0/4.0	0.1	4-8	4-7' CLAY, some silt, medium soft, damp, iron staining, Gley 1 5/1, gray 7-8' No Recovery
				0.1		
10			2.2/4.0	0.1	8-12	8-10.2' CLAY, some silt, medium soft, damp, iron staining, Gley 1 5/1, gray 10.2-12' No Recovery
				NA		
15			2.4/4.0	0.2	12-16	12-14.4' Silty CLAY, soft/ medium soft, damp/ moist, iron staining, Gley 1 4/10Y dark greenish gray 14.4-16' No Recovery
				NA		
20			2.5/4.0	0.1	16-20	16-18.5' Silty CLAY, soft/ medium soft, damp/ moist, iron staining, wet at bottom, Gley 1 4/10Y dark greenish gray 18.5-20' No Recovery
				NA		
25			4.0/4.0	NA	20-24	20-24' Clayey SILT, wet, soft/ medium soft, Silty CLAY at bottom, 2.5Y 3/1, very dark gray
				NA		
25			2.8/4.0	NA	24-28	24-26.8' CLAY, some silt, increasing with depth, medium soft, damp, Gley 1 4/1, dark gray 26.8-28' No Recovery
				NA		
30			3.8/4.0	NA	28-32	28-31.8' Silty CLAY, medium soft, damp, iron staining, Gley 1 6/10Y greenish gray

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.: EN-5

Project No.: 07-184

Date Drilled: 1/11/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.8/4.0	NA	28-32	28-31.8' Silty CLAY, medium soft, damp, iron staining, Gley 1 6/10Y greenish gray 31.8-32' No Recovery
35			3.5/4.0	NA	32-36	32-35.5' Silty CLAY, medium soft, damp, iron staining, Gley 1 6/10Y greenish gray 35.5-36' No Recovery
				NA		
40			3.6/4.0	NA	36-40	36-37' CLAY, soft, damp to moist 37-39.6' Silty CLAY, medium soft, damp, iron staining, Gley 1 6/10Y, greenish gray 39.6-40' No Recovery
		NA				
45						
50						
55						
60						
65						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-6

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 643867, 3295304

Surface Elev.: NM

Boring T.D.: 68 ft.

Boring Dia.: 0-12': 3.25"; 12-68': 2.25"

Date Started: 1/14/2019

Date Completed: 1/14/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.7/4.0	0	0-4	0-2.7' CLAY, medium soft/ stiff, damp, some iron staining, 2.5Y 4/1, dark gray 2.7-4' No Recovery
			0			
5			2.2/4.0	0	4-8	4-6.2' CLAY, soft to medium soft, damp, Fe nodules, Silty CLAY at bottom, 2.5Y 5/2, grayish brown 6.2-8' No Recovery
			0			
10			3.0/4.0	0	8-12	8-9.3' Silty CLAY, moist/ wet, soft, iron staining 9.3-11' Silty CLAY, medium soft/ stiff, damp, Fe nodules, 2.5Y 5/2, grayish brown 11-12' No Recovery
			0			
15			2.5/4.0	0	12-16	12-14.5' CLAY, some silt, medium soft/ stiff, damp, some iron staining, Clayey SILT at 12.5-13', Gley 1 4/N, dark gray 14.5-16' No Recovery
			0			
20			3.3/4.0	0	16-20	16-19.3' Silty CLAY/ Clayey SILT, soft/ medium soft, moist/ wet, some iron staining, 5Y 5/1, gray 19.3-20' No Recovery
			0			
25			2.4/4.0	0	20-24	20-22.4' CLAY, some silt, medium soft, damp, calcium nodules at bottom, some iron staining, 5Y 5/1, gray 22.4-24' No Recovery
			0			
28			3.8/4.0	0	24-28	24-27.8' CLAY, some silt, medium soft, damp, Fe/ Mn nodules, Gley 1 5/5GY, greenish gray 27.8-28' No Recovery
			0			
30			3.8/4.0	0	28-32	28-31.8' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/2, grayish brown

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-6

Project No.: 07-184      Date Drilled: 1/14/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.8/4.0	0	28-32	28-31.8' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/2, grayish brown 31.8-32' No Recovery
			4.0/4.0	0	32-36	32-36' Silty CLAY, medium soft, moist, iron staining, 2.5Y 5/2, grayish brown
35			4.0/4.0	0	36-40	36-40' Silty CLAY, medium soft, damp, iron staining, Gley 1 5/10Y, greenish gray
			4.0/4.0	0	40-44	40-44' CLAY, some silt, medium soft/ stiff, damp, Fe nodules, 2.5Y 6/1, gray
40			4.0/4.0	0	44-48	44-48' CLAY, stiff, damp, iron staining, soft at bottom, 2.5Y 6/1, gray
			4.0/4.0	0	48-52	48-51.7' CLAY, stiff, damp, soft lenses, iron staining, 2.5Y 6/1, gray 51.7-52' No Recovery
45			3.7/4.0	0	52-56	52-55.1' CLAY, stiff, soft at top, damp, iron staining, Fe/ Mn nodules, Gley 1 7/10Y, light greenish gray 55.1-56' No Recovery
			3.1/4.0	0	56-60	56-60' CLAY, stiff, damp/ dry, iron staining, Gley 1 7/10Y, light greenish gray
50			4.0/4.0	0	60-64	60-64' CLAY, stiff, damp, iron staining, some silt, some calcite nodules, Gley 1 6/10Y, greenish gray
			4.0/4.0	0	64-68	64-64.5' SILT, saturated, loose/ semi dense, brown 64.5-65.5' Silty CLAY, medium soft, damp, iron staining 65.5-67.5' CLAY, stiff, damp/ dry, iron staining, Gley 1 6/10Y, greenish gray
55			3.5/4.0	0		
60						
65						



# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

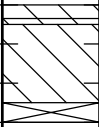
Baton Rouge, LA

Lake Charles, LA

Boring/Well No.: EN-6

Project No.: 07-184

Date Drilled: 1/14/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
65			3.5/4.0	0 0	64-68	64-64.5' SILT, saturated, loose/ semi dense, brown 64.5-65.5' Silty CLAY, medium soft, damp, iron staining 65.5-67.5' CLAY, stiff, damp/ dry, iron staining, Gley 1 6/10Y, greenish gray 67.5-68' No Recovery
70						
75						
80						
85						
90						
95						
100						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-7

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 643882, 3295337

Surface Elev.: NM

Boring T.D.: 48 ft.

Boring Dia.: 3-1/4"

Date Started: 8/21/2018

Date Completed: 8/21/2018

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.8/4.0		0-4	0-2.8' CLAY, medium soft, damp, iron staining, Fe/ Mn nodules, some silt at bottom, 5Y 4/1, dark gray 2.8-4' No Recovery
5			2.1/4.0		4-8	4-6.1' Silty CLAY, damp, soft/ medium soft, dark mineral staining, 5Y 5/1, gray 6.1-8' No Recovery
10			2.0/4.0		8-12	8-10' Silty CLAY, medium soft, damp, Fe/ Mn nodules, sticky, 5Y 5/1, gray 10-12' No Recovery
15			2.4/4.0		12-16	12-14.4' Silty CLAY, medium soft, damp, Fe/ Mn nodules, sticky, dark mineral staining at top, 5Y 5/1, gray 14.4-16' No Recovery
20			2.7/4.0		16-20	16-18.7' Silty CLAY, Clayey SILT, medium soft, moist to wet, iron staining, Gley 1 4/10Y, dark greenish gray 18.7-20' No Recovery
25			4.0/4.0		20-24	20-22.7' SILT, saturated, loose/ semi dense 22.7-24' CLAY, medium soft, damp, some silt, dark mineral staining, Gley 1 5/10Y, greenish gray
28			2.5/4.0		24-28	24-26.5' CLAY, some silt, medium soft, damp, Fe/ Mn nodules, some dark mineral staining at bottom, Gley 1 5/10Y, greenish gray 26.5-28' No Recovery
30			3.8/4.0		28-32	28-31.8' Silty CLAY, medium soft, damp, iron staining, 5Y 5/2, olive gray

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.: EN-7

Project No.: 07-184 Date Drilled: 8/21/2018

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.8/4.0		28-32	28-31.8' Silty CLAY, medium soft, damp, iron staining, 5Y 5/2, olive gray 31.8-32' No Recovery
35			4.0/4.0		32-36	32-36' Silty CLAY, medium soft, damp, iron staining, 5Y 5/2, olive gray
40			3.6/4.0		36-40	36-39.6' Silty CLAY, medium soft, damp, iron staining, 5Y 5/2, olive gray 39.6-40' No Recovery
45			4.0/4.0		40-44	40-44' CLAY, stiff, damp/ dry, iron staining, Fe/ Mn nodules, 5Y 5/2, olive gray
50			4.0/4.0		44-48	44-48' CLAY, stiff, damp/ dry, iron staining, Fe/ Mn nodules, some calcium nodules, 5Y 5/2, olive gray
55						
60						
65						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-8

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644719, 3295601

Surface Elev.: NM

Boring T.D.: 48 ft.

Boring Dia.: 3-1/4"

Date Started: 1/16/2019

Date Completed: 1/16/2019

Well Dia./Materials: NA

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.9/4.0	0	0-4	0-2.9' CLAY, some silt, damp, medium soft/ stiff, some Fe nodules, 2.5Y 4/1, dark gray 2.9-4' No Recovery
5			3.7/4.0	0	4-8	4-7.7' CLAY, some silt, medium soft, damp, iron staining, 2.5Y 5/1, gray 7.7-8' No Recovery
10			2.4/4.0	0	8-12	8-10.4' CLAY, some silt, medium soft, damp, iron staining, 2.5Y 5/1, gray 10.4-12' No Recovery
15			4.0/4.0	0	12-16	12-16' CLAY, medium soft/ stiff, damp, some iron staining, Gley 1 4/N, dark gray
20			3.8/4.0	0	16-20	16-19.8' CLAY, medium soft/ stiff, damp, some iron staining, Gley 1 4/N, dark gray 19.8-20' No Recovery
25			3.2/4.0	0	20-24	20-20.6' CLAY, medium soft/ stiff, damp, some iron staining, Gley 1 4/N, dark gray 20.6-22.3' Clayey SILT, semi dense, wet, some iron staining 22.3-23.2' CLAY, medium soft, damp, some iron staining, Gley 1 4/N, dark gray 23.2-24' No Recovery
25			2.5/4.0	0	24-28	24-26.5' CLAY, medium soft, damp, iron staining, Fe/ Mn nodules, Gley 1 5/10Y, greenish gray 26.5-28' No Recovery
30			4.0/4.0	0	28-32	28-32' Silty CLAY, medium soft/ soft, damp, iron staining, 2.5Y 5/3, light olive brown

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services  
 New Orleans, LA      Houston, TX      Baton Rouge, LA      Lake Charles, LA

Boring/Well No.: EN-8

Project No.: 07-184      Date Drilled: 1/16/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			4.0/4.0	0	28-32	28-32' Silty CLAY, medium soft/ soft, damp, iron staining, 2.5Y 5/3, light olive brown
35			4.0/4.0	0	32-36	32-36' Silty CLAY, medium soft/ soft, damp, iron staining, 2.5Y 5/3, light olive brown
40			3.8/4.0	0	36-40	36-39.8' Silty CLAY, medium soft/ soft, damp, iron staining, 2.5Y 5/3, light olive brown 39.8-40' No Recovery
45			3.7/4.0	0	40-44	40-43.7' Silty CLAY, medium soft, damp, iron staining, 2.5Y 5/4, light olive brown 43.7-44' No Recovery
50			4.0/4.0	0	44-48	44-48' Silty CLAY, medium soft, damp, iron staining, 2.5Y 5/4, light olive brown
55						
60						
65						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.: EN-9

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644700, 3295641

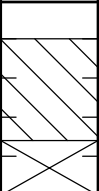
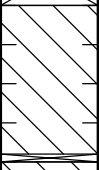
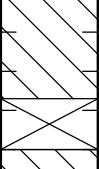
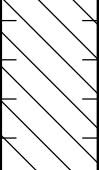
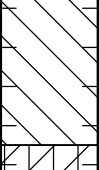
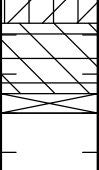
Surface Elev.: NM Boring T.D.: 24 ft. Boring Dia.: 2-1/4"

Date Started: 1/16/2019 Date Completed: 1/16/2019 Well Dia./Materials: NA

Drilling Company: ICON Driller: Dylon White

Drilling Method: Direct Push Grouting Method: Portland/Bentonite

Logged by: Joe Hoy Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.6/4.0	0.2	0-4	0-2.6' CLAY, damp, medium soft, 2.5Y 3/1, very dark gray 2.6-4' No Recovery
5			3.8/4.0	0.3	4-8	4-7.8' CLAY, medium soft, damp, iron staining, slight odor at top, 5Y 5/1, gray 7.8-8' No Recovery
10			2.7/4.0	0	8-12	8-10.7' CLAY, medium soft, damp, iron staining, slight odor at top, Clayey SILT lense at 8.7-9.1', 5Y 5/1, gray 10.7-12' No Recovery
15			4.0/4.0	0	12-16	12-16' CLAY, medium soft/ stiff, damp, some iron staining, Gley 1 4/N, dark gray
20			4.0/4.0	0	16-20	16-20' CLAY, some silt, medium soft/ stiff, damp, some iron staining, Gley 1 4/N, dark gray
25			3.5/4.0	0	20-24	20-20.5' CLAY, some silt, medium soft/ stiff, damp, some iron staining, Gley 1 4/N, dark gray 20.5-21.7' Clayey SILT, wet, semi dense 21.7-23.5' Silty CLAY, medium soft, damp, Fe nodules, Gley 1 4/N, dark gray 23.5-24' No Recovery
30						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-10

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644744, 3295564

Surface Elev.: NM

Boring T.D.: 24 ft.

Boring Dia.: 2-1/4"

Date Started: 1/16/2019

Date Completed: 1/16/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylan White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.0/4.0	NA	0-4	0-3' CLAY, medium soft, damp, Fe nodules, 2.5Y 5/1, gray 3-4' No Recovery
5			3.9/4.0	NA	4-8	4-7.9' CLAY, medium soft, damp, Fe nodules, iron staining, 2.5Y 5/1, gray 7.9-8' No Recovery
10			3.5/4.0	NA	8-12	8-11.5' CLAY, medium soft, damp, Fe nodules, iron staining, 2.5Y 5/1, gray 11.5-12' No Recovery
15			3.0/4.0	NA	12-16	12-15' CLAY, medium soft, damp, Fe nodules, iron staining, 2.5Y 5/1, gray 15-16' No Recovery
20			4.0/4.0	NA	16-20	16-20' CLAY, medium soft, damp, some iron staining, Gley 1 4/1, dark gray
25			3.3/4.0	NA	20-24	20-23.3' Silty CLAY/ Clayey SILT, damp/ moist, soft/ medium soft, some iron staining, Gley 1 4/1, dark gray 23.3-24' No Recovery
30						

# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-11

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644100, 3295066

Surface Elev.: NM

Boring T.D.: 24 ft.

Boring Dia.: 2-1/4"

Date Started: 1/17/2019

Date Completed: 1/17/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.1/4.0	0.2	0-4	0-1.1' CLAY, damp, stiff, dark gray 1.1-2.1' Clayey SILT, damp to moist, semi dense, 5Y 5/2, olive gray 2.1-4' No Recovery
NA						
5			2.3/4.0	0	4-8	4-6.3' Silty CLAY, medium soft, damp, Fe/ Mn nodules, iron staining, 2.5Y 5/1, gray 6.3-8' No Recovery
NA						
10			1.8/4.0	0	8-12	8-9.8' CLAY, medium soft, damp, iron staining, Gley 1 4/N, dark gray 9.8-12' No Recovery
NA						
15			3.6/4.0	0	12-16	12-15.6' CLAY, medium soft, damp, Gley 1 4/N, dark gray 15.6-16' No Recovery
0						
20			3.0/4.0	0	16-20	16-16.8' CLAY, medium soft, damp, Gley 1 4/N, dark gray 16.8-19' Clayey SILT, moist, semi dense, Gley 1 4/10Y, dark greenish gray 19-20' No Recovery
0						
25			3.6/4.0	0	20-24	20-21.5' Clayey SILT, moist, semi dense, Gley 1 4/10Y, dark greenish gray 21.5-23.6' Silty CLAY, damp to moist, soft, medium soft at bottom, Gley 1 3/10Y, very dark greenish gray 23.6-24' No Recovery
0						
30						



# MICHAEL PISANI & ASSOCIATES, INC.

Environmental Consulting Services

New Orleans, LA

Houston, TX

Baton Rouge, LA

Lake Charles, LA

Boring/Well No.:

EN-12

Project: Louisiana Wetlands, et al., vs Energen, et al.

Project No.: 07-184

Location: St Mary Parish, Louisiana

Coordinates: UTM 15R 644120, 3295040

Surface Elev.: NM

Boring T.D.: 24 ft.

Boring Dia.: 0-12': 3-1/4"; 12-24': 2-1/4"

Date Started: 1/17/2019

Date Completed: 1/17/2019

Well Dia./Materials:

3/4" PVC

Drilling Company: ICON

Driller: Dylon White

Drilling Method: Direct Push

Grouting Method: Portland/Bentonite

Logged by: Joe Hoy

Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.7/4.0	NA	0-4	0-2.7' CLAY, medium soft, damp, shell fragments, iron staining, Silty CLAY at bottom, 5Y 5/1, gray 2.7-4' No Recovery
5			2.3/4.0	NA	4-8	4-6.3' Clayey SILT, moist to wet, semi dense, some clay at top, some clay at bottom, 5Y, 4/1, dark gray 6.3-8' No Recovery
10			3.7/4.0	NA	8-12	8-11.7' CLAY, medium soft/ stiff, damp, iron staining, Gley 1 3/N, very dark gray 11.7-12' No Recovery
15			3.6/4.0	NA	12-16	12-15.6' CLAY, stiff, damp, soft moist Silty CLAY lens at 13.5-14.2', Gley 1 4/N, dark gray 15.6-16' No Recovery
20			3.0/4.0	NA	16-20	16-17' CLAY, stiff, damp, Gley 1 4/N, dark gray 17-19' Silty CLAY/ Clayey SILT, moist, soft, 5Y 5/2, olive gray 19-20' No Recovery
25			2.5/4.0	NA	20-24	20-21.5' Silty CLAY, soft, damp/ moist, 5Y 5/2, olive gray 21.5-22.5' CLAY, medium soft, damp, Gley 1 2.5/10Y, greenish black 22.5-24' No Recovery
30						



# Environmental Resources Management

Boring/Well No.: EN-13

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 543935, 3294623

Surface Elev.: NM Boring T.D.: 60 ft. Boring Dia.: 2.25 inch

Date Started: 7/24/2019 Date Completed: 9/26/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

Drilling Method: Hand Auger(0-8'), Direct Push(8-60') Grouting Method: Portland/Bentonite

Logged by: Charles Trahan (0-8')/Reece Thompson (8-60') Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/2.0	1.24	NM	0-2	0.0-2.0': CLAY: grayish brown, medium soft, moist, no odor, iron staining, some silt
			2.0/2.0	2.02	NM	2-4	2.0-4.0': CLAY: with silt, grayish brown, medium soft, moist, slight odor, iron staining
5			2.0/2.0	3.71	NM	4-6	4.0-6.0': CLAY: with silt, gray, soft, has odor, moist
			2.0/2.0	4.15	NM	6-8	6.0-8.0': CLAY: with silt, gray, soft, slight odor, moist
10			3.5/4.0	6.0	0.7	8-12	8.0-11.5': CLAY: gray with mottled iron staining, stiff, dry, dark gray silty lens at 11.0-11.25'
				4.85	0.6		11.5-12.0': No recovery
15			2.5/4.0	3.83	1.1	12-16	12.0-14.5': silty CLAY: gray, wet, soft
				5.0	NM		14.5-16.0': No recovery
20			4.0/4.0	4.18	2.0	16-20	16.0-20.0': silty CLAY: gray, saturated, soft
				4.94	1.4		
25	2.0/4.0	4.17	1.5	20-24	20.0-21.2': silty CLAY: gray, saturated soft		
		4.59			21.2-22.0': silty CLAY: very dark gray, medium stiff, very moist		
					22.0-24.0': No recovery		
30	3.0/4.0	4.48	1.2	24-28	24.0-27.0': silty CLAY: gray, stiff, moist		
		4.72	1.1		27.0-28.0': No recovery		
	3.5/4.0	5.35	NA	28-30	28.0-30.0': silty CLAY: gray, medium stiff, moist, mottled iron staining, iron nodules		



Project No.: 0494247 Date Drilled: 7/24/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.5/4.0	6.07	1.7	30-32	30.0-31.5': silty CLAY: gray, medium stiff, moist, mottled iron staining, iron nodules 31.5-32.0': No recovery
35			3.0/4.0	6.74	1.2	32-36	32.0-35.0': silty CLAY: gray, soft, wet, mottled iron staining, iron nodules 35.0-36.0': No recovery
				7.0	1.2		
40			3.5/4.0	8.36	1.0	36-40	36.0-39.5': silty CLAY: gray, soft, wet, mottled iron staining, iron nodules 39.5-40.0': No recovery
				7.38	0.7		
45			3.0/4.0	7.71	NA	40-44	40.0-43.0': CLAY: light gray, medium stiff, moist, calcium nodules, iron nodules, iron staining 43.0-44.0': No recovery
				7.43			
50			3.5/4.0	6.66	NA	44-48	44.0-47.5': CLAY: light gray, medium stiff, moist, calcium nodules, iron nodules, iron staining 47.5-48.0': No recovery
				6.52			
55			4.0/4.0	7.76	NA	48-52	48.0-52.0': CLAY: light gray, iron staining, soft, moist
				8.34			
60			4.0/4.0	9.39	NA	52-56	52.0-56.0': sandy CLAY: brown, iron nodules, iron staining, wet, soft
				9.25			
			3.0/2.0	6.09	NA	56-58	56.0-58.0': silty CLAY: light gray, iron nodules, iron staining, dry, stiff
		5.34					
	1.5/2.0	4.34	NA	58-60	58.0-59.5': sandy CLAY: light brown, iron staining, stiff, dry		
		4.70			59.5-60.0': No recovery		
65							



# Environmental Resources Management

Boring/Well No.: EN-14

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 643920, 3294656

Surface Elev.: NM Boring T.D.: 8 ft. Boring Dia.: 2.25 inch

Date Started: 7/24/2019 Date Completed: 7/24/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

Drilling Method: Hand Auger Grouting Method: Portland/Bentonite

Logged by: Charles Trahan Soil Sample Method: Hand Auger

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/2.0	1.65	NM	0-2	0.0-2.0': CLAY: brownish gray, medium soft, moist, no odor, very little silt
			2.0/2.0	2.22	NM	2-4	2.0-4.0': CLAY: medium soft, moist, no odor, little silt, dark gray to brownish gray
5			2.0/2.0	2.62	NM	4-6	4.0-6.0': CLAY: gray to brownish gray, iron staining, medium soft, moist, no odor
			2.0/2.0	2.33	NM	6-8	6.0-8.0': CLAY: gray, medium soft, moist, no odor, iron staining
10							
15							
20							
25							
30							



# Environmental Resources Management

Boring/Well No.: EN-15

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 644217, 3294672

Surface Elev.: NM Boring T.D.: 8 ft. Boring Dia.: 2.25 inch

Date Started: 7/24/2019 Date Completed: 7/24/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

Drilling Method: Hand Auger Grouting Method: Portland/Bentonite

Logged by: Charles Trahan Soil Sample Method: Hand Auger

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/2.0	1.08	NM	0-2	0.0-2.0': CLAY: dark gray to brownish gray, medium soft, moist, no odor
			2.0/2.0	1.54	NM	2-4	2.0-4.0': CLAY: brownish gray, medium soft, moist, no odor, little silt, iron staining
5			2.0/2.0	1.60	NM	4-6	4.0-6.0': CLAY: brownish gray, medium soft, moist, no odor, little silt, iron staining
			2.0/2.0	1.37	NM	6-8	6.0-8.0': CLAY: gray to brownish gray, medium soft, moist, no odor, little silt
10							
15							
20							
25							
30							



# Environmental Resources Management

Boring/Well No.: EN-16A

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 644007, 3295307

Surface Elev.: NM Boring T.D.: 44 ft. Boring Dia.: 2.25 inch

Date Started: 9/18/2019 Date Completed: 9/19/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

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

Logged by: Kurt Boehringer Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.0/4.0	1.56	0.2	0-4	0.0-0.3': silty CLAY: dark brown
				0.91	0.2		0.3-3.0': CLAY: gray with iron stained mottling, damp, moderately firm
5			2.0/4.0	1.08	0.2	4-8	4.0-6.0': CLAY: gray with iron stained mottling, damp, firm
					NM		6.0-8.0': No recovery
10			2.7/4.0	1.17	0.3	8-12	8.0-9.7': CLAY: gray with iron stained mottling, damp, soft
					1.06		NM
15			2.2/4.0	0.92	0.4	12-16	10.7-12.0': No recovery
					0.75		NM
20			3.2/4.0	0.6	0.3	16-20	14.2-16.0': No recovery
					0.63		0.3
25			4.0/4.0	0.77	0.4	20-24	19.2-20.0': No recovery
					0.46		0.1
30	4.0/4.0	0.6	0.1	24-28	24.0-28.0': silty CLAY: wet, gray, soft		
			0.51		0.0		
30	1.5/2.0	0.48	0.1	28-30	28.0-29.5': SILT: wet, gray, soft		
					29.5-30.0': No recovery		



Project No.: 0494247 Date Drilled: 9/18/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			2.1/2.0	0.46	0.2	30-32	30.0-32.0': silty CLAY: wet, gray, soft, some woody debris at 31.5-32.0'
			3.8/2.0	0.58	1.3	32-34	32.0-34.0': SILT: wet, gray, soft
35			3.5/2.0	0.44	0.6	34-36	34.0-36.0': sandy SILT: gray, wet, soft, woody debris at 35.3-35.5'
			3.3/4.0	1.53	1.5	36-40	36.0-39.3': silty CLAY: gray, moist, soft, wet at 38.4-38.8'
				0.41	0.8		39.3-40.0': No recovery
40				4.0/4.0	0.76	1.0	40-44
	0.80	1.4					
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: EN-16B

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 644007, 3295307

Surface Elev.: NM Boring T.D.: 44 ft. Boring Dia.: 2.25 inch

Date Started: 9/18/2019 Date Completed: 9/19/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

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

Logged by: Kurt Boehringer Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.0/4.0	1.56	0.2	0-4	0.0-0.3': silty CLAY: dark brown
				0.91	0.2		0.3-3.0': CLAY: gray with iron stained mottling, damp, moderately firm
5			2.0/4.0	1.08	0.2	4-8	4.0-6.0': CLAY: gray with iron stained mottling, damp, firm
					NM		6.0-8.0': No recovery
10			2.7/4.0	1.17	0.3	8-12	8.0-9.7': CLAY: gray with iron stained mottling, damp, soft
				1.06	NM		9.7-10.7': CLAY: dark gray, damp, soft
15			2.2/4.0	0.92	0.4	12-16	10.7-12.0': No recovery
				0.75	NM		12.0-14.2': CLAY: dark gray, damp, moderately firm
20			3.2/4.0	0.6	0.3	16-20	14.2-16.0': No recovery
				0.63	0.3		16.0-19.2': silty CLAY: gray, damp, firm, soft and moist from 18.2-18.9'
25			4.0/4.0	0.77	0.4	20-24	19.2-20.0': No recovery
				0.46	0.1		20.0-24.0': silty CLAY: moist, gray, soft, wet at 21.0-23.6'
30	4.0/4.0	0.6	0.1	24-28	24.0-28.0': silty CLAY: wet, gray, soft		
		0.51	0.0				
30	1.5/2.0	0.48	0.1	28-30	28.0-29.5': SILT: wet, gray, soft		
						29.5-30.0': No recovery	





Project No.: 0494247 Date Drilled: 9/18/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			2.1/2.0	0.46	0.2	30-32	30.0-32.0': silty CLAY: wet, gray, soft, some woody debris at 31.5-32.0'
			3.8/2.0	0.58	1.3	32-34	32.0-34.0': SILT: wet, gray, soft
35			3.5/2.0	0.44	0.6	34-36	34.0-36.0': sandy SILT: gray, wet, soft, woody debris at 35.3-35.5'
			3.3/4.0	1.53	1.5	36-40	36.0-39.3': silty CLAY: gray, moist, soft, wet at 38.4-38.8'
				0.41	0.8		39.3-40.0': No recovery
40			4.0/4.0	0.76	1.0	40-44	40.0-44.0': CLAY: gray, damp, firm
				0.80	1.4		
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: EN-17

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 644400, 3294791

Surface Elev.: NM Boring T.D.: 60 ft. Boring Dia.: 2.25 inch

Date Started: 9/19/2019 Date Completed: 9/19/2019 Well Dia./Materials: NA

Drilling Company: ICON Driller: Chris Miller

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

Logged by: Kurt Boehringer Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.4/4.0	1.12	1.2	0-4	0.0-0.9': silty CLAY: dark brown, damp, firm
				1.0	2.4		0.9-3.4': CLAY: damp, dark gray to light gray with iron stained mottling, firm
5			3.0/4.0	1.03	1.9	4-8	4.0-7.0': CLAY: dark gray to light gray with iron stained mottling, damp, firm
				1.29	2.0		7.0-8.0': No recovery
10			2.4/4.0	1.49	2.3	8-12	8.0-10.4': CLAY: gray with iron stained mottling, damp, moderately firm
				1.47	NM		10.4-12.0': No recovery
15			3.6/4.0	1.58	3.1	12-16	12.0-15.6': CLAY: gray with iron stained mottling, damp, firm, solid gray (no iron stained mottling) at 14.3-15.6'
				1.7	2.7		15.6-16.0': No recovery
20			4.0/4.0	1.62	3.1	16-20	16.0-20.0': CLAY: gray, damp, firm, iron stained mottling at 16.0-17.0'
				1.45	3.4		
25			2.7/4.0	0.96	2.5	20-24	20.0-21.8': CLAY: gray, damp, moderately firm
				1.32	1.1		21.8-22.3': silty CLAY: gray with iron stained mottling, moist, soft
	2.7/4.0	0.95	1.6	24-28	22.3-22.7': CLAY: gray, damp, moderately firm		
		0.98	2.3		22.7-24.0': No recovery		
	4.0/4.0	0.95	1.6	24-28	24.0-26.7': silty CLAY: damp to moist, dark gray to light gray with iron stained mottling, moderately soft		
		0.98	2.3		26.7-28.0': No recovery		
30	4.0/4.0	0.98	1.7	28-30	28.0-30.0': silty CLAY: damp, light gray with iron stained mottling, moderately firm		



Project No.: 0494247 Date Drilled: 9/19/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
30			4.0/4.0	0.87	1.9	30-32	30.0-32.0': silty CLAY: damp, light gray with iron stained mottling, moderately firm	
			4.0/4.0	0.72	1.5	32-36	32.0-36.0': silty CLAY: damp, gray with iron stained mottling, moderately firm	
35				0.6	1.8			
			3.2/4.0	0.74	0.9	36-40	36.0-39.2': CLAY: damp, gray with iron stained mottling, moderately firm 39.2-40.0': No recovery	
40				0.93	0.7			
			4.0/4.0	0.86	2.7	40-44	40.0-44.0': CLAY: damp, gray with iron stained mottling, firm	
				1.12	2.2			
45				2.9/4.0	0.92	2.0	44-48	44.0-46.9': CLAY: damp, gray with iron stained mottling, firm 46.9-48.0': No recovery
					1.12	1.3		
50				4.0/4.0	1.5	1.2	48-52	48.0-52.0': CLAY: damp, gray with iron stained mottling, firm
			1.72	2.3				
55		4.0/4.0	1.62	2.5	52-56	52.0-56.0': CLAY: damp, gray with iron stained mottling, firm, dark spots at 54.0'		
			1.73	1.8				
60		4.0/4.0	1.26	1.4	56-60	56.0-60.0': CLAY: damp, gray with iron stained mottling, very firm		
			1.69	0.9				
65								



# Environmental Resources Management

Boring/Well No.: EN-18

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 644480, 3294857

Surface Elev.: NM Boring T.D.: 40 ft. Boring Dia.: 2.25 inch

Date Started: 9/23/2019 Date Completed: 9/23/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

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

Logged by: Caitlin Manieri Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			3.0/4.0	1.30	0.8	0-4	0.0-1.0': silty CLAY: dark brown
				1.28	1.6		1.0-1.3': GRAVEL
5			3.3/4.0	1.26	1.8	4-8	4.0-7.3': silty CLAY: gray with iron stained mottling, firm
				0.83	1.2		7.3-8.0': No recovery
10			2.0/4.0	1.20	1.8	8-12	8.0-10.0': silty CLAY: gray with iron stained mottling, soft
					2.8		10.0-12.0': No recovery
15			4.0/4.0	1.66	2.8	12-16	12.0-16.0': silty CLAY: gray, firm
					1.62		2.0
20			4.0/4.0	1.68	2.8	16-20	16.0-20.0': silty CLAY: gray with iron stained mottling, firm, dark gray at 19.0-19.5'
					1.25		2.4
25			3.5/4.0	0.85	1.2	20-24	20.0-23.0': clayey SILT: gray, soft, saturated
					1.02		1.2
30	3.4/4.0	0.93	1.0	24-28	23.5-24.0': No recovery		
			1.03		0.6	24.0-27.4': silty CLAY: gray with iron stained mottling, firm	
	4.0/4.0	0.6	0.7	28-30	27.4-28.0': No recovery		
						28.0-30.0': clayey SILT: gray with iron stained mottling, soft	



Project No.: 0494247 Date Drilled: 9/23/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			4.0/4.0	0.62	0.6	30-32	30.0-32.0': clayey SILT: gray with iron stained mottling, soft
			4.0/4.0	0.5	1.0	32-36	32.0-36.0': clayey SILT: gray with iron stained mottling, soft, moist
35				0.63	0.6		
			4.0/4.0	0.69	0.7	36-40	36.0-40.0': silty CLAY: gray with iron stained mottling, soft, moist
40				0.8	0.6		
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: EN-19

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 643969, 3295223

Surface Elev.: NM Boring T.D.: 40 ft. Boring Dia.: 2.25 inch

Date Started: 9/24/2019 Date Completed: 9/24/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

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

Logged by: Caitlin Manieri Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	1.53	1.7	0-4	0.0-0.3': silty CLAY: dark brown 0.3-2.5': silty CLAY: light brown with iron stained mottling 2.5-4.0': No recovery
				1.23	0.8		
5			2.0/4.0	0.95	0.9	4-8	4.0-6.0': silty CLAY: gray with iron stained mottling, firm 6.0-8.0': No recovery
				1.24			
10			1.8/4.0	1.11	0.7	8-12	8.0-9.8': silty CLAY: light brown, soft, moist 9.8-12.0': No recovery
				0.91			
15			1.9/4.0	0.67	1.0	12-16	12.0-13.7': silty CLAY: gray with iron stained mottling, soft 13.7-13.9': clayey SILT: gray with iron stained mottling, moist, soft 13.9-16.0': No recovery
				0.44			
20			4.0/4.0	0.99	0.2	16-20	16.0-20.0': clayey SILT: gray, soft, wet at 17.0'
				0.53	0.3		
25			2.3/4.0	0.75	0.4	20-24	20.0-20.4': silty CLAY: gray 20.4-21.0': silty CLAY: dark gray with iron stained mottling 21.0-22.3': silty CLAY: light brown with iron stained mottling, soft 22.3-24.0': No recovery
				0.62			
30			3.4/4.0	0.74	0.3	24-28	24.0-25.5': silty CLAY: gray 25.5-27.0': clayey SILT: dark gray, soft 27.0-27.4': clayey SILT: light brown, soft 27.4-28.0': No recovery
				0.43	0.3		
			3.9/4.0	0.41	0.3	28-30	28.0-30.0': clayey SILT: light brown, soft



Project No.: 0494247 Date Drilled: 9/24/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.9/4.0	0.46	0.1	30-32	30.0-31.9': clayey SILT: light brown, soft 31.9-32.0': No recovery
35			4.0/4.0	0.52	0.1	32-36	32.0-33.4': clayey SILT: light brown, soft 33.4-36.0': silty CLAY: gray with iron stained mottling, soft
				0.61	0.1		
40			4.0/4.0	0.70	0.2	36-40	36.0-40.0': silty CLAY: light brown
				0.86	0.1		
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: EN-20

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 0643847, 3295235

Surface Elev.: NM Boring T.D.: 40 ft. Boring Dia.: 2.25 inch

Date Started: 9/25/2019 Date Completed: 9/25/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

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

Logged by: Caitlin Manieri Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION	
0			2.6/4.0	1.87	0.6	0-4	0.0-0.4': silty CLAY: dark gray 0.4-2.6': silty CLAY: gray with iron stained mottling, firm 2.6-4.0': No recovery	
				1.75				
5				1.3/4.0	2.28	0.7	4-8	4.0-5.3': silty CLAY: gray with iron stained mottling, firm 5.3-8.0': No recovery
10				2.1/4.0	2.26	0.8	8-12	8.0-10.1': silty CLAY: gray with iron stained mottling, firm 10.1-12.0': No recovery
				2.26				
15				3.5/4.0	1.59	0.6	12-16	12.0-14.0': silty CLAY: gray with iron stained mottling, firm 14.0-15.5': clayey SILT: gray, moist 15.5-16.0': No recovery
				1.09	0.7			
20				3.2/4.0	1.71	NA	16-20	16.0-19.2': clayey SILT: gray, soft, wet at 19.0' 19.2-20.0': No recovery
				2.23	NA			
25				4.0/4.0	1.72	0.2	20-24	20.0-24.0': clayey SILT: gray, wet, soft
		1.65	0.8					
30		4.0/4.0	2.72	0.8	24-28	24.0-27.0': clayey SILT: gray, wet, soft 27.0-28.0': silty CLAY: gray, soft		
		2.70	0.5					
30		3.7/4.0	3.04	1.0	28-30	28.0-30.0': silty CLAY: gray, firm		





# Environmental Resources Management

Boring/Well No.: EN-20

Project No.: 0494247 Date Drilled: 9/25/2019

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.7/4.0	2.81	0.6	30-32	30.0-31.7': silty CLAY: gray, firm 31.7-32.0': No recovery
35			4.0/4.0	2.18	0.7	32-36	32.0-36.0': silty CLAY: gray, firm
				2.14	0.6		
40			4.0/4.0	2.06	NA	36-40	36.0-40.0': silty CLAY: gray, firm
	1.95	NA					
45							
50							
55							
60							
65							



# Environmental Resources Management

Boring/Well No.: EN-21

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 644134, 3294683

Surface Elev.: NM Boring T.D.: 6 ft. Boring Dia.: 2.25 inch

Date Started: 9/26/2019 Date Completed: 9/26/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

Drilling Method: Hand Auger Grouting Method: Portland/Bentonite

Logged by: Reece Thompson Soil Sample Method: Hand Auger

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/2.0	1.09	NM	0-2	0.0-2.0': CLAY: dark brown, soft, moist, organics, calcium nodules
			2.0/2.0	2.64	NM	2-4	2.0-4.0': CLAY: gray, soft, moist, iron staining
5			2.0/2.0	2.19	NM	4-6	4.0-6.0': CLAY: gray, soft, moist, iron staining
10							
15							
20							
25							
30							



# Environmental Resources Management

Boring/Well No.: EN-22

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 643651, 3294541

Surface Elev.: NM Boring T.D.: 6 ft. Boring Dia.: 2.25 inch

Date Started: 9/27/2019 Date Completed: 9/27/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Chris Miller

Drilling Method: Hand Auger Grouting Method: Portland/Bentonite

Logged by: Reece Thompson Soil Sample Method: Hand Auger

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.0/2.0	0.96	51.90	0-2	0.0-2.0': CLAY: brown, soft, moist, iron staining, hydrocarbon smell
			2.0/2.0	1.29	21.60	2-4	2.0-4.0': CLAY: gray-brown, soft, moist, iron staining, hydrocarbon smell
5			2.0/2.0	1.68	5.50	4-6	4.0-6.0': CLAY: gray-brown, soft, moist, iron staining, no hydrocarbon smell
10							
15							
20							
25							
30							



# Environmental Resources Management

Boring/Well No.: EN-23

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 0644365, 3295407

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 2.25 inch

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

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	NA	0	0-4	0.0-2.5': clayey SILT to silty CLAY: black (10YR, 2/1), gradually transitioning to silty clay and color of dark grayish brown (10YR, 4/2), damp, stiff, no odor 2.5-4.0': No recovery
5			3.75/4.0	NA	0	4-8	4.0-7.75': CLAY: gray (10YR, 5/1), orange and brown mottling, stiff, damp, no odor 7.75-8.0': No recovery
10			2.1/4.0	NA	0	8-12	8.0-10.1': silty CLAY: gray (10YR, 5/1), orange mottling, stiff (except for soft zone from 9.0-9.5'), damp, no odor 10.1-12.0': No recovery
15			4.0/4.0	NA	0	12-16	12.0-16.0': CLAY: gray (10YR, 5/1) grades to black (10YR, 2/1), damp, no odor, stiff, some orange mottling near top
20			2.3/4.0	NA	0	16-20	16.0-18.3': CLAY to silty CLAY: gradually grades from clay to silty clay, some small silt lenses near bottom, grayish brown (10YR, 5/2), damp, stiff (clay) to soft (silty clay), no odor 18.3-20.0': No recovery
25			3.8/4.0	NA	0	20-24	20.0-22.0': clayey SILT: wet, grayish brown (10YR, 5/2), very soft, no odor 22.0-23.8': silty CLAY: grayish brown (10YR, 5/2), stiff, damp, no odor 23.8-24.0': No recovery
30			3.0/4.0	NA	0	24-28	24.0-27.0': silty CLAY: damp, grayish brown (10YR, 5/2), soft, no odor 27.0-28.0': No recovery



# Environmental Resources Management

Boring/Well No.: EN-24

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 0644275, 3295352

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 2.25 inch

Date Started: 12/5/2019 Date Completed: 12/5/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.5/4.0	1.2	0	0-4	0.0-0.3': TOPSOIL: black (10YR, 2/1), damp, no odor, rootlets
				1.79	NA		0.3-2.5': CLAY: gray (10YR, 5/1), damp, very stiff gradually transitioning to stiff at bottom, no odor
5			2.4/4.0	1.5	0	4-8	2.5-4.0': No recovery
					1.46		NA
10			2.2/4.0	0.81	0	8-12	6.4-8.0': No recovery
					1.12		NA
15			2.3/4.0	1.13	0	12-16	10.2-12.0': No recovery
					1.17		NA
20			2.4/4.0	0.72	0	16-20	14.3-16.0': No recovery
					0.84		NA
25			3.1/4.0	0.67	0	20-24	18.4-20.0': No recovery
					0.85		0
30			2.5/4.0	0.85	0	24-28	23.1-24.0': No recovery
					0.92		NA
							26.5-28.0': No recovery



# Environmental Resources Management

Boring/Well No.: EN-25

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 0643749, 3294819

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

Date Started: 12/5/2019 Date Completed: 12/5/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION		
0			2.8/4.0	1.41	0	0-4	0.0-0.3': TOPSOIL: with gravel and shells, rootlets 0.3-2.8': CLAY: gray (10YR, 5/1), stiff, damp, no odor, orange and black mottling 2.8-4.0': No recovery		
				1.47	NA				
5			3.2/4.0	2.27	0			4-8	4.0-7.2': CLAY: gray (10YR, 5/1), stiff, damp, no odor, orange and black mottling, increase in silt content near bottom 7.2-8.0': No recovery
				1.4	0				
10			2.8/4.0	1.11	0	8-12	8.0-10.8': silty CLAY: gray (10YR, 5/1), damp, wet and soft from 9.25-9.5', otherwise stiff, no odor, orange and black mottling 10.8-12.0': No recovery		
								1.48	0
15			3.9/4.0	1.37	0	12-16	12.0-15.9': CLAY: gray (10YR, 5/1) with color change to black (10YR, 2/1) at 15.2', damp, stiff, no odor, orange mottling 15.9-16.0': No recovery		
								1.14	0
20			2.8/4.0	0.96	0	16-20	16.0-18.8': silty CLAY: gray (10YR, 5/1), medium soft, damp, wet from 18.0-18.8', no odor, orange mottling 18.8-20.0': No recovery		
								0.87	0
25			3.2/4.0	0.83	0	20-24	20.0-23.2': silty CLAY: gray (10YR, 5/1), soft, wet from 20.0-21.0', damp elsewhere, orange mottling, color change to black (10YR, 5/1) at 22.9' 23.2-24.0': No recovery		
								1.38	0
30									



# Environmental Resources Management

Boring/Well No.: EN-26

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 0643774, 3294801

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

Date Started: 12/5/2019 Date Completed: 12/5/2019 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION		
0			2.1/4.0	1.29	0	0-4	0.0-2.1': CLAY: grayish brown (10YR, 5/2), damp, very stiff, no odor, orange and black mottling 2.1-4.0': No recovery		
				1.38	0				
5			3.0/4.0	1.42	0	4-8	4.0-7.0': CLAY: gray (10YR, 5/1), damp, stiff, no odor, orange mottling 7.0-8.0': No recovery		
				1.3	0				
10			2.3/4.0	1.03	0	8-12	8.0-10.3': silty CLAY: gray (10YR, 5/1), damp, stiff, except for soft/wet area from 9.3-9.5', no odor, orange mottling 10.3-12.0': No recovery		
				1.44	0				
15			3.7/4.0	1.2	0	12-16	12.0-15.7': silty CLAY to CLAY: gray (10YR, 5/1), damp, soft at top (12.0-12.5'), otherwise stiff, no odor, orange mottling 15.7-16.0': No recovery		
				1.56	0				
20			2.1/4.0	0.7	0	16-20	16.0-18.1': silty CLAY: gray (10YR, 5/1), wet and soft at 16.4-16.8' and 17.8-18.1', otherwise stiff and damp, no odor, slight orange mottling 18.1-20.0': No recovery		
				0.86	NA				
			2.7/4.0	0.89	0	20-24	20.0-22.7': silty CLAY: gray (10YR, 5/1), wet and soft at 20.0-21.0', damp and stiff at 21.0-22.7', no odor, slight orange mottling 22.7-24.0': No recovery		
				1.37	0				
25									
30									



# Environmental Resources Management

Boring/Well No.: EN-27

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 29.77724, -91.51018

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

Date Started: 2/18/2020 Date Completed: 2/18/2020 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION		
0			2.6/4.0	3.82	NR	0-4	0.0-0.5': TOP SOIL: with gravel and shells 0.5-1.3': silty CLAY: brown (10YR, 5/3), stiff, damp, no odor, some orange mottling 1.3-1.5': CLAY: black (10YR, 2/1), stiff, damp, no odor 1.5-2.6': silty CLAY: brown (10YR, 5/3), stiff, damp, no odor, some orange mottling		
5					NR			4-8	2.6-4.0': No recovery 4.0-5.6': silty CLAY: brown (10YR, 5/3), stiff except soft from 0.8-1.0', damp, orange mottling, no odor 5.6-8.0': No recovery
10			3.9/4.0	3.64	NR	8-12	8.0-11.9': CLAY: dark gray (10YR, 4/1), stiff, damp, no odor, orange mottling 11.9-12.0': No recovery		
					NR			12-16	12.0-15.9': CLAY to silty CLAY: black (10YR, 2/1) grading to dark gray (10YR, 4/1), slight odor in black area, damp, stiff 15.9-16.0': No recovery
15			3.9/4.0	3.3	NR	16-20	16.0-18.7': silty CLAY to SILT: dark gray (10YR, 4/1), sharp transition from damp to wet at 17.95', orange mottling, stiff but decreasing in stiffness in wet area, no odor 18.7-20.0': No recovery		
					NR			20-24	20.0-21.9': SILT to silty CLAY: gray (10YR, 6/1), wet, soft, no odor, slight orange mottling 21.9-23.9': silty CLAY to CLAY: gray (10YR, 5/1) grading to black (10YR, 2/1), stiff, damp, no odor, slight orange mottling 23.9-24.0': No recovery
20			3.9/4.0	4.57	NR	20-24			
					NR				
25									
30									





# Environmental Resources Management

Boring/Well No.: EN-28

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 29.77648, -91.50896

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 2.25 inch

Date Started: 2/18/2020 Date Completed: 2/18/2020 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.9/4.0	0.83	NA	0-4	0.0-2.9': CLAY to silty CLAY: black (10YR, 2/1) grading to gray (10YR, 5/1), very stiff grading to soft, some orange mottling, damp, no odor
				0.78	NA		2.9-4.0': No recovery
5			2.3/4.0	0.70	NA	4-8	4.0-6.3': silty CLAY: gray (10YR, 5/1), soft to medium stiff, orange mottling, damp, no odor
					NA		6.3-8.0': No recovery
10			2.3/4.0	1.72	NA	8-12	8.0-10.3': silty CLAY: dark gray (10YR, 4/1), stiff, damp, some orange mottling, no odor, decreasing in silt content with depth
					NA		10.3-12.0': No recovery
15			3.7/4.0	2.09	NA	12-16	12.0-14.4': CLAY: dark gray (10YR, 4/1), very stiff, damp, no odor, some orange mottling
					1.75		NA
20			2.5/4.0	1.36	NA	16-20	15.3-15.7': CLAY: gray (10YR, 5/1), stiff, damp, no odor
					0.5		NA
25			3.9/4.0	0.61	NA	20-24	16.0-17.4': CLAY: gray (10YR, 5/1), stiff, damp, no odor
					0.60		NA
30			2.1/4.0	0.78	NA	24-28	17.9-18.2': CLAY: gray (10YR, 5/1), stiff, damp, no odor
							NA
							18.5-20.0': No recovery
							20.0-20.5': clayey SILT: gray (10YR, 5/1), saturated, very soft, no odor
							20.5-22.3': silty CLAY: gray (10YR, 5/1), wet, soft, no odor
							22.3-23.9': clayey SILT: gray (10YR, 5/1), saturated, very soft, no odor
							23.9-24.0': No recovery
							24.0-25.1': clayey SILT: gray (10YR, 5/1), saturated, soft, no odor
							25.1-26.1': silty CLAY: greenish gray (GLE Y1, 5/10GY), stiff, damp, no odor
							26.1-28.0': No recovery



# Environmental Resources Management

Boring/Well No.: EN-29

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 29.77835, -91.50882

Surface Elev.: NM Boring T.D.: 60 ft. Boring Dia.: 2.25 inch

Date Started: 2/19/2020 Date Completed: 2/19/2020 Well Dia./Materials: NA

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0	[Diagonal hatching]	[Well casing]	2.2/4.0	1.1	0.0	0-4	0.0-2.2': CLAY: very dark gray (10YR, 3/1), very stiff to stiff with depth, silt lenses at 1.2', 1.4', 1.5', and 1.8', damp, no odor 2.2-4.0': No recovery
				1.49	0.0		
5	[Diagonal hatching]	[Well casing]	1.5/4.0	1.40	0.0	4-8	4.0-4.5': CLAY: black (10YR, 2/1), stiff, damp, no odor 4.5-4.7': clayey SILT: dark gray (10YR, 4/1), soft, damp, no odor 4.7-5.2': CLAY: black (10YR, 2/1), soft, damp, no odor 5.2-5.5': clayey SILT: dark gray (10YR, 4/1), soft, damp, no odor 5.5-8.0': No recovery
				0.53	0.1		
10	[Diagonal hatching]	[Well casing]	1.8/4.0	0.85	0.1	8-12	8.0-9.8': silty CLAY: gray (10YR, 5/1), soft, damp, no odor, orange mottling 9.8-12.0': No recovery
				1.17	0.0		
15	[Diagonal hatching]	[Well casing]	4.0/4.0	1.52	0.0	12-16	12.0-16.0': silty CLAY: dark gray (10YR, 4/1), stiff, damp, no odor, color change from 2.9-3.5' to black (10YR, 2/1)
				1.18	0.0		
20	[Diagonal hatching]	[Well casing]	2.1/4.0	1.38	0.0	16-20	16.0-18.1': silty CLAY: greenish gray (GLE Y1, 5/10GY), stiff, damp, no odor 18.1-20.0': No recovery
				1.52	0.0		
25	[Diagonal hatching]	[Well casing]	3.4/4.0	0.74	0.0	20-24	20.0-23.4': sandy clayey SILT to CLAY (at bottom): fine grained, dark gray (10YR, 4/1) to black (10YR, 2/1) at bottom, soft, damp, no odor, some orange mottling 23.4-24.0': No recovery
				0.67	0.0		
30	[Diagonal hatching]	[Well casing]	2.6/4.0	0.78	0.0	24-28	24.0-25.3': CLAY: black (10YR, 2/1), soft, damp, no odor 25.3-26.6': clayey SILT: greenish gray (GLE Y1, 5/10GY), damp, no odor, contains lighter colored nodules 26.6-28.0': No recovery
				0.79	0.0		
			3.9/4.0	0.88	0.0	28-30	28.0-30.0': clayey SILT to silty CLAY: greenish gray (GLE Y1, 5/10GY) grading to gray (10YR, 5/1), stiff, damp, no odor, orange mottling



Project No.: 0494247 Date Drilled: 2/19/2020

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
30			3.9/4.0	0.77	0.0	30-32	30.0-31.9': clayey SILT to silty CLAY: greenish gray (GLEY1, 5/10GY) grading to gray (10YR, 5/1), stiff, damp, no odor, orange mottling
			3.0/4.0	0.5	0.0	32-36	31.9-32.0': No recovery
35				0.52	0.0		32.0-35.0': silty CLAY: gray (10YR, 5/1), damp, no odor, orange mottling
			3.0/4.0	0.49	0.0	36-40	35.0-36.0': No recovery
40				0.64	0.0		36.0-39.0': silty CLAY: gray (10YR, 5/1), soft, damp, no odor, orange mottling
			2.7/4.0	0.72	0.0	40-44	39.0-40.0': No recovery
45				0.86	0.0		40.0-42.7': silty CLAY: gray (10YR, 5/1), soft, damp, no odor, orange mottling
			4.0/4.0	1.23	0.0	44-48	42.7-44.0': No recovery
50				1.06	0.0		44.0-48.0': CLAY: gray (10YR, 5/1), stiff, damp, no odor, orange mottling
			4.0/4.0	1.24	0.0	48-52	
55				1.55	0.0		48.0-52.0': CLAY to silty CLAY: gray (10YR, 5/1), damp, no odor, orange mottling
			4.0/4.0	1.79	0.0	52-56	
60		1.16	0.0	52.0-56.0': silty CLAY: gray (10YR, 5/1), stiff, damp, no odor, orange mottling			
	4.0/4.0	0.65	0.0	56-60			
65		1.29	0.0		56.0-57.1': clayey SILT: grayish brown (10YR, 5/2), soft, saturated, no odor		
						57.1-60.0': silty CLAY: gray (10YR, 5/1), very stiff, damp, no odor, orange mottling	



# Environmental Resources Management

Boring/Well No.: EN-30

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 29.77672, -91.51171

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 2.25 inch

Date Started: 2/20/2020 Date Completed: 2/20/2020 Well Dia./Materials: 3/4 inch PVC

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.7/4.0	1.5	0.0	0-4	0.0-2.7': CLAY: very dark brown (10YR, 2/2) grading to dark grayish brown at bottom, stiff, damp, no odor, orange mottling, rootlets at top
				1.81	0.0		2.7-4.0': No recovery
5			3.1/4.0	1.82	0.0	4-8	4.0-7.1': CLAY: dark grayish brown (10YR, 4/2), stiff, damp, no odor, orange mottling
				1.65	0.0		7.1-8.0': No recovery
10			3.2/4.0	1.51	0.0	8-12	8.0-11.2': silty CLAY: dark gray (10YR, 4/1) grading to brown (10YR, 4/3), stiff in dark gray area and soft in brown area, damp, no odor, orange mottling
				0.78	0.0		11.2-12.0': No recovery
15			2.5/4.0	1.08	0.0	12-16	12.0-14.5': silty CLAY: gray (10YR, 5/1), soft, damp, root at 13.35', no odor, orange mottling, increasing water content with depth
				0.99	0.0		14.5-16.0': No recovery
20			2.8/4.0	0.61	0.0	16-20	16.0-18.8': silty CLAY: dark gray (10YR, 4/1), saturated at top 1.0', otherwise damp, soft, no odor, some orange mottling
				0.78	0.0		18.8-20.0': No recovery
25			3.9/4.0	0.94	0.0	20-24	20.0-23.9': silty CLAY to clayey SILT: very dark gray (10YR, 3/1), saturated grading to damp, calcite nodules throughout, organics at 22.9'
				1.0	0.0		23.9-24.0': No recovery
30	3.0/4.0	1.13	0.0	24-28	24.0-24.6': clayey SILT: high density of calcite nodules in a matrix of soft, saturated clayey silt		
		1.15	0.0		24.6-27.0': clayey SILT: greenish gray (GLE Y1, 5/10GY), stiff, damp, calcite nodules throughout, no odor		
							27.0-28.0': No recovery



# Environmental Resources Management

Boring/Well No.: EN-31

Project: Louisiana Wetlands, et al., vs Energen, et al. Project No.: 0494247

Location: St. Mary Parish, Louisiana Coordinates: 29.77856, -91.51495

Surface Elev.: NM Boring T.D.: 28 ft. Boring Dia.: 2.25 inch

Date Started: 2/21/2020 Date Completed: 2/21/2020 Well Dia./Materials: NA

Drilling Company: ICON Driller: Dylon White

Drilling Method: Geoprobe 7822DT Grouting Method: Portland/Bentonite

Logged by: Patrick Baudoin Soil Sample Method: Geoprobe tube with acetate liner

DEPTH (FEET)	LITHOLOGY (GRAPHIC LOG)	WELL CONSTRUCTION	SAMPLE RECOVERY (FEET/FEET)	FIELD EC (mS/cm)	PID (ppm)	DESCRIPTION INTERVAL (FEET)	SOIL DESCRIPTION
0			2.7/4.0	1.46	0.1	0-4	0.0-2.7': CLAY to clayey SILT: dark gray (10YR, 4/1), stiff, damp, orange mottling, no odor
				1.12	0.1		2.7-4.0': No recovery
5			2.0/4.0	0.85	0.2	4-8	4.0-6.0': clayey SILT to silty CLAY: dark gray (10YR, 4/1), stiff, saturated at top and damp at bottom, orange mottling, no odor
				0.93	0.2		6.0-8.0': No recovery
10			2.2/4.0	1.02	0.1	8-12	8.0-10.2': silty CLAY: dark gray (10YR, 4/1), stiff, damp, orange mottling, no odor
				1.59	0.2		10.2-12.0': No recovery
15			2.6/4.0	1.09	0.2	12-16	12.0-12.6': clayey SILT: dark gray (10YR, 4/1), soft, saturated, no odor
				2.08	0.1		12.6-14.6': clayey SILT to silty CLAY: stiff, damp, no odor, some orange mottling, organic material at 12.9'
20			2.7/4.0	0.99	0.0	16-20	14.6-16.0': No recovery
				1.07	0.1		16.0-17.5': silty CLAY: dark gray (10YR, 4/1), stiff, no odor, damp, some calcite nodules near top
25			2.1/4.0	1.3	0.0	20-24	17.5-18.55': clayey SILT: dark gray (10YR, 4/1), soft, saturated, no odor
				1.29	0.0		18.55-18.7': silty CLAY: dark gray (10YR, 4/1), stiff, damp, no odor
30			3.6/4.0	1.23	0.0	24-28	18.7-20.0': No recovery
				0.94	0.0		20.0-21.0': silty CLAY: dark gray (10YR, 4/1), stiff, damp, no odor
							21.0-22.1': silty CLAY: greenish gray (GLE Y1, 5/10GY), more silt than about layer, stiff, damp, no odor
							22.1-24.0': No recovery
							24.0-27.6': silty CLAY: greenish gray (GLE Y1, 5/10GY), increasing in silt content with depth, very stiff at top to stiff at bottom, damp, no odor, some orange mottling
							27.6-28.0': No recovery