

Geotechnical Services - Data Report

Oyster Bayou Marsh Restoration (CS-59)

Cameron Parish, Louisiana

for

State of Louisiana

Office of Coastal Protection and Restoration

July 11, 2013



GEOENGINEERS 

Earth Science + Technology

Geotechnical Services – Data Report

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Cameron Parish, Louisiana

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Office of Coastal Protection and Restoration
Restoration Branch**

July 11, 2013



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Geotechnical Services – Data Report
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana

File No. 16715-026-00

July 11, 2013

Prepared for:

State of Louisiana
Office of Coastal Protection and Restoration
Restoration Branch
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INTRODUCTION

GeoEngineers, Inc. (GeoEngineers) is pleased to present this geotechnical data report for the Oyster Bayou Marsh Restoration (CS-59) project in Cameron Parish, Louisiana. Based on information provided by Coastal Protection and Restoration Authority (CPRA), the project site is located east of Mud Lake, north of Highway 27, and approximately 4 miles west of Monkey Island. The proposed project will create 510 acres of saline marsh, nourish 90 acres of existing saline marsh habitat, and create 14,140 Lineal Feet (LF) of earthen terraces. The marsh creation will include hydraulically dredging material from the Gulf of Mexico (GOM) and pumping it to the designated fill area. The borrow area in the GOM should contain at least 4.5 million cubic yards of sediment. Additionally, the recommended borrow site should be free to any oil/gas infrastructure, major underwater obstructions, and archaeological findings.

For this project, GeoEngineers is only involved with delineation of off-shore borrow sites in the GOM which includes borrow site surveys, analysis and related geotechnical services. GeoEngineers is working with Coastal Planning and Engineering (CPE) and Ocean Surveys, Inc. (OSI) to complete the tasks required for the current project. Both firms are subcontractors to our contract with CPRA. All work for this project is conducted in in general accordance with our proposal for the project dated February 4, 2013 and your notice to proceed on February 6, 2013 under the contract 2503-11-67 Task 9.

An outside party not associated with this scope will perform the in-shore geotechnical analysis.

FIELD EXPLORATION

A detailed geophysical survey was completed by CPE prior to mobilization of the vibracore equipment to perform field exploration. The geophysical survey included joint seismic reflection profiling, sidescan sonar, bathymetric and magnetometer survey conducted within the proposed investigation area. Based on the geophysical survey, CPE provided GeoEngineers with a map showing 20 vibracore locations, bathymetric contours, magnetic anomalies, side scan sonar contacts, ship wreck buffer zones and significant anomaly buffer zones. This information will be provided in the Geophysical Survey report that will be prepared by CPE and submitted for review to CPRA in the first week of July 2013.

Based on the coordinates provided by CPE for the vibracores, GeoEngineers and OSI performed a field exploration using an OSI Model 1200 vibratory corer and support equipment mounted on OSI's 37-foot x 16 foot shallow draft pontoon barge, R/V CanDu. The pontoon barge is configured with a 4-point mooring system and a mechanized A-frame for handling the vibratory corer. The vessel is a highly efficient sampling platform and has sufficient deck space to accommodate all vibratory coring operations. The coring vessel moon pool is located at the center of the vessel. The vessel operator positioned the vessel within 10 feet of the intended sampling locations. Sediment core samples were acquired employing an OSI Model 1200 pneumatic vibratory corer. The Model 1200 was configured with a 4 inch outer diameter core barrel complete with 3 ½ inch inner diameter polycarbonate clear liner material. The core barrel was fitted with a nose cone or "cutter" and a core retainer to improve core retention and sample retrieval. The Model 1200 was

configured with a 20 foot long core barrel. After retrieving the soil samples, the liner was measured and cut in to approximately 4 foot sections, taped, labeled and securely stored on the boat. At the end of each working day, the samples were off loaded by GeoEngineers on to a pickup truck and transported to the GeoEngineers office in Baton Rouge, Louisiana.

A total of twenty (20) vibracore borings were performed to obtain soil samples for laboratory testing. Vibracore boring location information as provided by OSI is given in Figure 3. The top of water surface was assumed to be at 0 feet. The approximate depth of water measured at the vibracore locations varied from 17.3 feet to 22.3 feet. The depth of the vibracores as measured from the mudline varied from approximately 15.5 feet to 20 feet. A map showing the location of each soil boring is included as Figure 2. A log of each vibracore boring containing a summary of laboratory data is included in Appendix A. The vibracores were performed from April 5 to April 29, 2013. In general, the vibracores should have been completed in three to four days as estimated in our proposal, but due to extended weather delays, the field exploration almost took 3 ½ weeks.

LABORATORY TESTING AND PHOTO LOG OF SAMPLES

Once at the laboratory, each of the four foot soil sample sections were cut in to two feet sections for better handling and reporting. Each of the two feet sections were split open in to two halves along the length of the tube and a Torvane test was run on most of the samples. The soil samples were logged per ASTM D2488 visual classification of soils. Thereafter the open tubes were digitally photographed against an 18% gray background. This is the standard reference value against which all camera light meters are calibrated. Use of an 18% gray background provides a known reference color. Soil samples were taken from each of the soil layers for testing. The unsampled half of the core was stored in core boxes and prepared for transportation to an outside geotechnical laboratory as directed by CPRA. Classification tests were run on the soils samples obtained. These tests include Atterberg limits, moisture contents and grain size (passing #200 sieve).

All lab tests were completed in accordance with the appropriate testing standards. Laboratory test results for all samples are included on the boring logs given in Appendix A. A log of digital photos is provided in Appendix B.

LIMITATIONS

The information presented in this report is based on vibracore borings and soil testing completed for this study, and judgments made by the certifying engineers. This report is specific to this site and should not be used other than for the design of the Oyster Bayou Marsh Restoration (CS-59) project located in Cameron Parish, Louisiana.

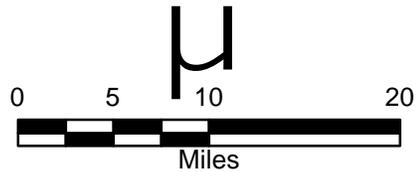
Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions expressed or implied should be understood.

Please refer to the appendix titled “Data Report Limitations and Guidelines for Use” for additional information pertaining to use of this report.

Map Revised: JUN 13, 2013



Office: BTR Path: P:\1671502600\Vicinity Map

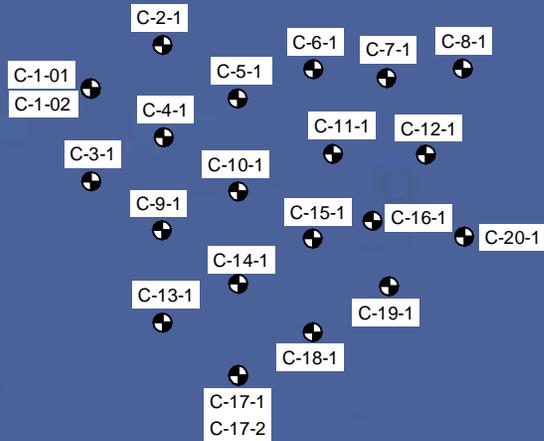


Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
 Transverse Mercator, Zone 10 N North, North American Datum 1983
 North arrow oriented to grid north

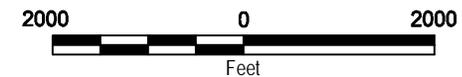
VICINITY MAP	
Oyster Bayou Marsh Restoration (CS-59) Cameron Parish, Louisiana	
	Figure 1



BORING DETAILS		
BORING #	LATITUDE	LONGITUDE
C-01-1	N29° 42' 53.64"	W93° 22' 23.00"
C-01-2	N29° 42' 53.72"	W93° 22' 23.03"
C-02-1	N29° 42' 58.32"	W93° 22' 14.56"
C-03-1	N29° 42' 44.06"	W93° 22' 22.77"
C-04-1	N29° 42' 48.77"	W93° 22' 14.25"
C-05-1	N29° 42' 52.91"	W93° 22' 05.54"
C-06-1	N29° 42' 56.09"	W93° 21' 56.62"
C-07-1	N29° 42' 55.32"	W93° 21' 47.90"
C-08-1	N29° 42' 56.42"	W93° 21' 38.90"
C-09-1	N29° 42' 39.14"	W93° 22' 14.26"
C-10-1	N29° 42' 43.30"	W93° 22' 05.31"
C-11-1	N29° 42' 47.37"	W93° 21' 54.14"
C-12-1	N29° 42' 47.46"	W93° 21' 43.10"
C-13-1	N29° 42' 29.57"	W93° 22' 13.99"
C-14-1	N29° 42' 33.73"	W93° 22' 05.07"
C-15-1	N29° 42' 38.56"	W93° 21' 56.33"
C-16-1	N29° 42' 40.48"	W93° 21' 49.26"
C-17-1	N29° 42' 24.18"	W93° 22' 04.87"
C-17-2	N29° 42' 24.25"	W93° 22' 04.89"
C-18-1	N29° 42' 28.82"	W93° 21' 56.13"
C-19-1	N29° 42' 33.74"	W93° 21' 47.17"
C-20-1	N29° 42' 39.03"	W93° 21' 38.36"

Legend

 C-2-1 Vibracore Sample Location



Notes:

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- Reference: 1. Aerial was taken from Google Earth Pro., Licensed to GeoEngineers Pro., Imagery Dated: 2012
 2. Boring locations were provided by Ocean Survey, Inc., Dated June 13, 2013

VIBRACORE BORING LOCATION PLAN

Oyster Bayou Marsh Restoration (CS-59)
 Cameron Parish, Louisiana



Figure 2

Core ID	Proposed Core Location					Sampled Location		Distance From Proposed Location	Field Observations							
	Louisiana South State Plane (NAD 83)		Target Penetration	Date	Time	Louisiana South State Plane (NAD 83)			Water Depth	Penetration	Recovery	NOAA Verified Tide (Feet M.L.L.W.)	NOAA Verified Tide (Feet NAVD88) from vdatum	Seafloor Depth (Feet M.L.L.W.)	Seafloor Depth (Feet NAVD88)	Comments
	Eastings (Feet)	Northing (Feet)	(Feet)	(Local)	(Local)	Eastings (Feet)	Northing (Feet)		(Feet)	(Feet)	(Feet)	(Feet)	(Feet)	(Feet)		
C-01-1	2633384.78	447584.97	20	4/5/13	09:02	2533384.88	447577.27	7.7	17.3	18.5	20.0	-0.05	-1.03	17.36	18.33	bottom 8' kept for analysis, remainder discarded
C-01-2	2633384.78	447584.97	20	4/5/13	11:13	2533382.40	447586.50	2.4	18.6	11.1	13.9	0.93	-0.05	17.67	18.65	sample kept, clay and silt in bottom of shoe
C-02	2634137.52	448042.00	20	4/12/13	12:33	2634136.95	448036.41	5.6	18.9	17.5	19.5	1.32	0.34	17.56	18.56	dense brown clay with grey silt veins in bottom
C-03	2633391.73	446609.99	20	4/12/13	13:33	2633387.78	446608.72	4.1	20.0	15.5	17.1	1.46	0.48	18.54	19.52	dense brown clay in bottom
C-04	2634147.88	447077.07	20	4/12/13	14:43	2634147.45	447070.97	6.1	20.0	15.5	17.0	1.62	0.64	18.36	19.36	
C-05	2634926.18	447478.95	20	4/29/13	17:32	2634922.78	447475.49	4.9	20.0	15.5	15.9	2.26	1.28	17.74	18.72	dense brown sand and clay in bottom
C-06	2635713.80	447775.00	20	4/12/13	11:18	2635715.29	447782.92	8.1	19.0	16.4	17.2	1.23	0.25	17.77	18.75	mod coarse brown sand in bottom
C-07	2636483.39	447697.88	20	4/12/13	9:09	2636482.25	447692.04	6.0	19.5	19.5	20.1	1.53	0.55	17.97	18.95	bottom .3 lost, fine sand and silt in bottom
C-08	2637284.26	447788.72	20	4/12/13	10:18	2637277.70	447788.21	6.6	19.2	19.5	19.9	1.31	0.33	17.89	18.87	soft grey silt and clay in bottom of sample
C-09	2634129.77	446102.25	20	4/5/13	12:33	2634128.96	446098.85	3.5	20.2	17.2	20.2	0.96	-0.02	19.24	20.22	
C-10	2634924.01	446503.96	20	4/22/13	7:40	2634926.18	446505.08	2.4	19.6	18.0	20.0	1.32	0.34	18.26	19.26	dense brown clay in bottom of shoe
C-11	2635923.46	446899.60	20	4/29/13	16:15	2635918.30	446898.61	5.3	20.5	19.5	20.1	2.23	1.25	18.27	19.25	silt, very fine grey sand in bottom
C-12	2636900.26	446892.25	20	4/12/13	8:01	2636891.29	446890.75	9.1	20.5	19.5	19.9	1.58	0.60	18.92	19.90	soft grey silt and clay in bottom of sample
C-13	2634141.86	445127.32	20	4/29/13	10:48	2634135.90	445131.62	7.3	21.6	19.5	20.3	2.01	1.03	19.59	20.57	firm grey clay in bottom
C-14	2634931.35	445647.05	20	4/29/13	14:59	2634930.20	445638.01	9.1	21.2	19.5	20.3	2.06	1.08	19.14	20.12	firm grey clay in bottom
C-15	2635714.77	446006.00	20	4/29/13	8:07	2635709.19	446012.11	8.3	22.2	16.0	17.5	2.36	1.38	19.84	20.82	brown, stiff clay in bottom of shoe
C-16	2636335.55	446200.00	20	4/29/13	9:22	2636335.96	446195.17	4.8	21.8	19.5	20.1	2.42	1.44	19.36	20.36	stiff grey clay and silt in bottom
C-17-1	2634926.66	444572.07	20	4/5/13	14:14	2634930.20	444572.59	3.6	22.3	17.2	20.0	1.25	0.27	21.06	22.03	sample discarded, no clay plug in bottom of sample
C-17-2	2634926.66	444572.07	20	4/5/13	14:52	2634928.86	444580.20	8.4	21.7	19.0	15.7	1.16	0.18	20.54	21.52	sample kept, grey soft clay in shoe
C-18	2635713.10	445031.00	20	4/29/12	13:31	2635709.42	445028.16	4.6	21.6	19.5	20.0	1.96	0.98	19.64	20.62	firm grey clay in bottom
C-19	2636509.88	445508.00	20	4/5/13	16:08	2636508.27	445510.88	3.3	21.0	20.0	20.0	1.03	0.05	19.97	20.95	
C-20	2637295.71	446032.00	20	4/29/13	12:15	2637294.42	446031.59	1.4	21.4	19.5	20.0	2.01	1.03	19.39	20.37	firm grey clay in bottom

TIDES BASED ON VERIFIED WATER LEVEL DATA FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) WATER LEVEL STATION 8768094 (CALCASIEU PASS, LA). DEPTHS ARE IN FEET AND REFERENCED TO MEAN LOWER LOW WATER (M.L.L.W.) AND NAVD88 (BASED ON VDATUM CONVERSION)

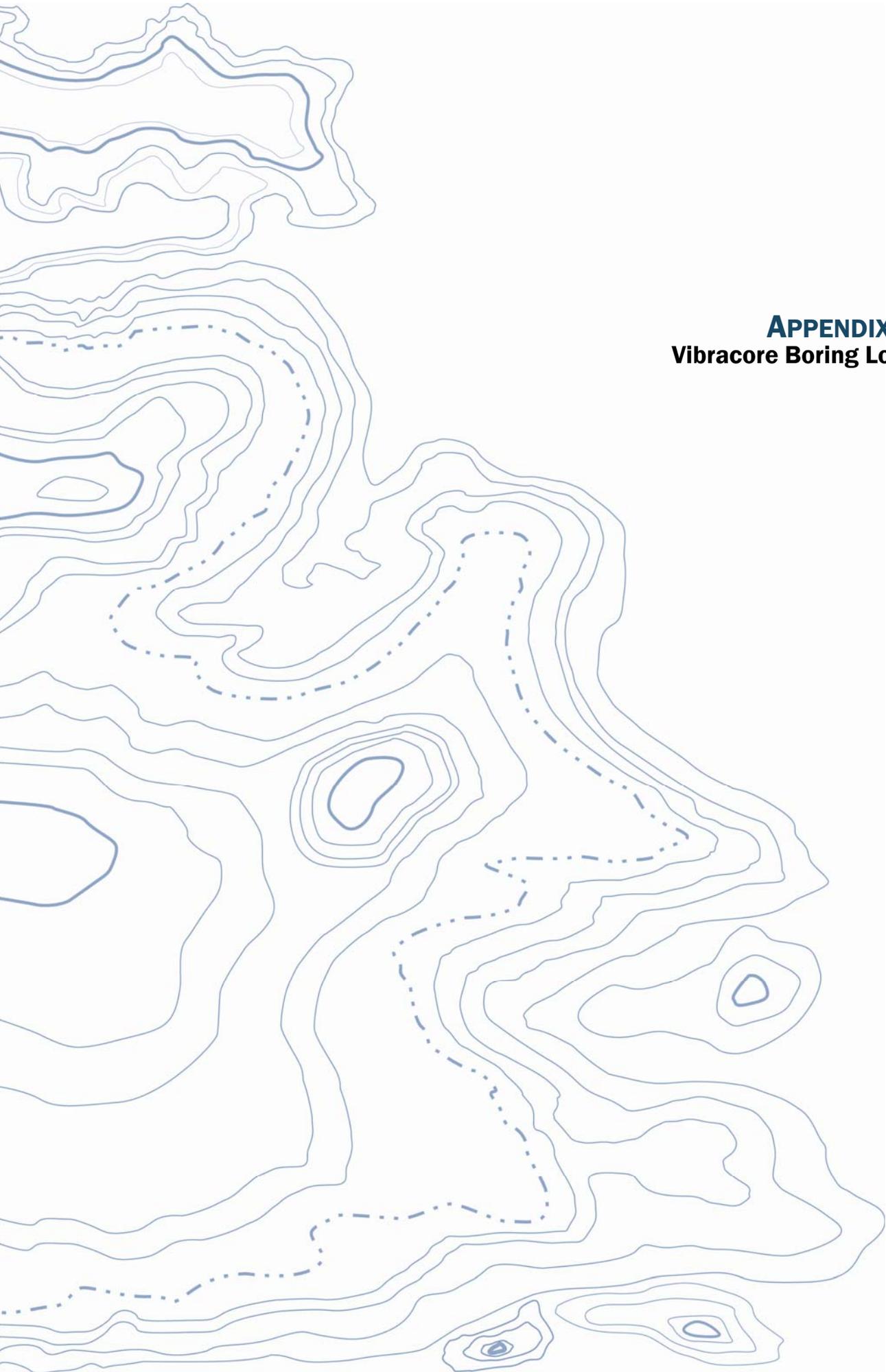
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Reference:

1. Table was provided by Ocean Surveys, Inc., Dated June 13, 2013

VIBRACORE SUMMARY TABLE	
Oyster Bayou Marsh Restoration (CS-59) Cameron Parish, Louisiana	
	Figure 3



APPENDIX A
Vibracore Boring Logs

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS <small>(LITTLE OR NO FINES)</small>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SP	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SM	SILTY SANDS, SAND - SILT MIXTURES
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	SILTS AND CLAYS		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
		SILTS AND CLAYS		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		SILTS AND CLAYS		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	SILTS AND CLAYS		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
		SILTS AND CLAYS		CH	INORGANIC CLAYS OF HIGH PLASTICITY
		SILTS AND CLAYS		OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	CC	Cement Concrete
	AC	Asphalt Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod



Measured groundwater level in exploration, well, or piezometer



Groundwater observed at time of exploration



Perched water observed at time of exploration

Graphic Log Contact



Distinct contact between soil strata or geologic units



Approximate location of soil strata change within a geologic soil unit

Material Description Contact



Distinct contact between soil strata or geologic units



Approximate location of soil strata change within a geologic soil unit

Laboratory / Field Tests

- %F Percent fines
- AL Atterberg limits
- CA Chemical analysis
- CP Laboratory compaction test
- CS Consolidation test
- DS Direct shear
- HA Hydrometer analysis
- MC Moisture content
- MD Moisture content and dry density
- OC Organic content
- PM Permeability or hydraulic conductivity
- PP Pocket penetrometer
- SA Sieve analysis
- TX Triaxial compression
- UC Unconfined compression
- VS Vane shear

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

Drilled	Start 4/12/2013	End 4/12/2013	Total Depth (ft)	33	Logged By Checked By	NM VT	Driller	Ocean Surveys, Inc.	Drilling Method	Vibracore		
Surface Elevation (ft) Vertical Datum			0.5		Hammer Data		Drilling Equipment				OSI Model 1200 Vibratory Corer Pontoon Barge (R/V CanDu)	
Latitude Longitude		N 29° 42' 44.06" W 93° 22' 22.77"			System Datum		Geographic Vertical Datum - NAVD88 (feet)		Groundwater Date Measured		Depth to Water (ft)	Elevation (ft)
Notes: See Figure A-1 for explanation of symbols. Values for elevation round off to the nearest tenth decimal place.											N/A	

Elevation (feet)	Depth (feet)	FIELD DATA					MATERIAL DESCRIPTION	LABORATORY DATA									
		Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level		Graphic Log	Group Classification	Water Content, %	Dry Density, (pcf)	Compressive Strength (TSF) ¹	Confining Pressure (KSF)	Strain, %	Liquid Limit (LL), %	Plasticity Index (PI), %	TorVane (TSF)**
0	0							Zero feet at water surface									
5	5																
10	10																
15	15																
17.5	17.5							Mudline encountered at 17.5 feet									
20	20						1	Very soft gray clay with silt	116.8				98	70	0.1L		
22	22						2	Very soft gray clay with silt	104.4						0.16L		
24	24						3	Very soft gray clay with silt	85				99	72	0.26L		
26	26						4	Very soft gray clay with silt	104.2						0.26L		
28	28						5	Soft gray clay with fine sand and shells	40.8				38	22			
30	30						6	Soft gray clay with fine sand and shells	32.7								
32	32						7	Firm gray sandy silt with clay	28.6				28	7			
34	34						8	Firm gray and tan silt with clay and sand	31								92
36	36						9	Stiff light tan clay with fine sand and clay pockets	32.8								

¹An Asterisk indicates a remold was used for strength testing.
 **Torvane (TSF) - S for standard vane 0 - 1 kg/cm²; L for large vane 0.2 kg/cm²

Log of Boring C-03-1



Project: Oyster Bayou Marsh Restoration (CS-59)
 Project Location: Cameron Parish, Louisiana
 Project Number: 16715-026-00

Baton Rouge, Date: 7/11/13 Path: P:\16715\026\GINTOYSTER BAYOU MARSH CREATION BORING LOGS.GPJ DBTemplate\LD Template\GEOENGINEERS\GDT\GIER_GEO TECH_LAB

Drilled	Start 4/5/2013	End 4/5/2013	Total Depth (ft) 38.8	Logged By Checked By	VT VT	Driller	Ocean Surveys, Inc.	Drilling Method	Vibracore
Surface Elevation (ft) Vertical Datum			0.2	Hammer Data		Drilling Equipment OSI Model 1200 Vibratory Corer Pontoon Barge (R/V CanDu)			
Latitude Longitude		N 29° 42' 24.25 W 93° 22' 4.89"		System Datum		Geographic Vertical Datum - NAVD88 (feet)			
Groundwater Date Measured		Depth to Water (ft)		Elevation (ft)		N/A			
Notes: See Figure A-1 for explanation of symbols. Values for elevation round off to the nearest tenth decimal place.									

Elevation (feet)	Depth (feet)	FIELD DATA					MATERIAL DESCRIPTION	LABORATORY DATA											
		Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name		Water Level	Graphic Log	Group Classification	Water Content, %	Dry Density, (pcf)	Compressive Strength (TSF) ¹	Confining Pressure (KSF)	Strain, %	Liquid Limit (LL), %	Plasticity Index (PI), %	TorVane (TSF)**	Passing No. 200 Sieve, %
0	0																		
5	5																		
10	10																		
15	15																		
20	20				1			CH	Mudline encountered at 19.1 feet Very soft dark gray and gray clay with silt and trace shells	116				78	56	0.05L			
25	25				2			CH	Very soft gray clay, trace shells										
30	30				3			CH	Very soft gray clay with trace silt and shells	59.5				67	48	0.05L			
35	35				4			CH	Very soft gray clay							0.05L			
40	40				5			CH	Very soft gray clay with shells and sand pockets	60.2				65	47	0.1	91		
45	45				6			CL	Very soft gray clay with trace shells	36.4				41	26	0.15L	57		
50	50				7			CH	Very soft gray clay with tan silt pockets							0.25L			
55	55				8			CH	Very soft gray clay	86.6				103	78	0.25L			
60	60				9			CH	Very soft gray clay	50.3				55	38	0.25L			
65	65				10			CH	Very soft gray clay							0.25L			

¹An Asterisk indicates a remold was used for strength testing.
**Torvane (TSF) - S for standard vane 0 - 1 kg/cm²; L for large vane 0.2 kg/cm²

Log of Boring C-17-2



Project: Oyster Bayou Marsh Restoration (CS-59)
Project Location: Cameron Parish, Louisiana
Project Number: 16715-026-00

Baton Rouge: Date: 7/11/13 Path: P:\16715\026\GINTO\OYSTER BAYOU MARSH CREATION BORING LOGS.GPJ_DB\template\Lab\template\GEOENGINEERS\GDT\GEBL_GEO TECH_LAB

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/8/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850	D422, C136 or C117						% Passing #200	
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)							
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-01-2	0-2	Gray Fat CLAY with silt	94.9	79	23	56												(CH)	
C-01-2	2-4	Gray Fat CLAY with silt	105.3															(CH)	
C-01-2	4-6	Gray Fat CLAY with silt and shells	114.6	111	30	81												(CH)	
C-01-2	6-8	Gray Fat CLAY with silt	91.0															(CH)	
C-01-2	9.7-10	Gray Fat CLAY with silt	94.0	110	25	85												(CH)	
C-01-2	10-12	Intermixed SAND, SILT and CLAY with shells	29.5														43.4	(SC-SM)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/8/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-03-1	0-1.5	Gray Fat CLAY with silt	116.8	98	28	70												(CH)	
C-03-1	1.5-3.5	Gray Fat CLAY with silt	104.4															(CH)	
C-03-1	3.5-5.5	Gray Fat CLAY with silt	85.0	99	27	72												(CH)	
C-03-1	5.5-6.5	Gray Fat CLAY with silt	104.2															(CH)	
C-03-1	6.5-7.5	Gray Lean CLAY with fine sand and shells	40.8	38	16	22												(CL)	
C-03-1	7.5-9.5	Gray Lean CLAY with fine sand and shells	32.7															(CL)	
C-03-1	9.5-11.5	Gray SANDY SILT with clay	28.6	28	21	7												(CL-ML)	
C-03-1	11.5-13.5	Gray and Tan SILT with clay and sand	31.0														92.1	(ML)	
C-03-1	13.5-15.5	Light Tan Lean CLAY with fine sand and clay pockets	32.8															(CL)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/8/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-04-1	0-1.5	Gray Fat CLAY with silt	116.8	99	28	71												(CH)	
C-04-1	1.5-3.5	Gray Fat CLAY with silt	101.6															(CH)	
C-04-1	3.5-5.5	Gray Fat CLAY with silt	102.8	102	27	75												(CH)	
C-04-1	5.5-7.5	Gray Fat CLAY	101.2															(CH)	
C-04-1	7.5-8	Gray Fat CLAY	102.9	100	28	72												(CH)	
C-04-1	8-9.5	Lean CLAY with silty sand and shells	40.8	31	15	16												(CL)	
C-04-1	9.5-11.5	Gray SANDY CLAY with silt	32.3	31	16	15												(CL)	
C-04-1	11.5-13.5	Gray SANDY CLAY with silt	32.3															(CL)	
C-04-1	13.5-15.5	Gray SANDY CLAY with silt	32.7															(CL)	

Project Name: LDNR/CPRA/Oyster Bayou Marsh Restoration (CS-59)

Technical Responsibility: _____

Date: _____

Project ID: 16715-026-00

Title: _____

BORING NUMBER	DEPTH (FT)		SOIL DESCRIPTION	MOISTURE %	UNIT WEIGHT (PCF)		ATTERBERG LIMITS			COMPRESSION TEST				TEST TYPE	COMMENTS
	FROM	TO			WET	DRY	LL	PL	PI	TSF	STRAIN %	CONFINING PRESSURE (KSF)	TYPE FAILURE		
C-02-1	0.0	1.5	Gray clay (CH)	108										MC	
C-02-1	1.5	3.5	Very soft gray clay with silt seams (CL)	113										MC	
C-02-1	3.5	5.5	Very soft gray clay (CH)	104										MC	
C-02-1	5.5	6.5	Very soft gray clay with silt seams (CL)	82										MC	
C-02-1	6.5	6.7	Firm gray sandy silt with shells (ML)	88										MC,M200	
C-02-1	6.7	7.5	Dark gray clay (CH)	57			57	24	33					MC,AL	
C-02-1	7.5	9.5	Firm gray sandy silt with clay (ML)	27										MC,M200	
C-02-1	9.5	11.5	Firm gray sandy silt with clay seams (ML)	32										MC,M200	
C-02-1	11.5	13.5	Firm gray sandy silt with ferrous inclusions (ML)	34										MC,M200	
C-02-1	13.5	15.5	Tan and gray clayey silt with trace sand (CL-ML)	29			26	21	5					MC,AL	
C-02-1	15.5	17.5	Firm gray brown silt (ML)	30										MC	
C-05-1	0.0	1.9	Very soft brownish gray clay (CH)	119			95	26	69					MC,AL	
C-05-1	1.9	3.9	Very soft brownish gray clay (CH)	112										MC	
C-05-1	3.9	5.9	Very soft brownish gray clay (CH)	122										MC	
C-05-1	5.9	7.9	Soft brownish gray clay (CH)	96			97	35	62					MC,AL	
C-05-1	8.7	9.9	Soft gray silty clay with trace shells (CL)	40										MC	
C-05-1	9.9	10.9	Soft gray very silty clay (CL)	36			34	16	18					MC,AL	
C-05-1	10.9	11.9	Soft greenish gray silty clay (CL)	34			36	16	20					MC,AL	
C-05-1	11.9	13.9	Firm brown and gray clayey silt (ML)	31			25	20	5					MC,AL	
C-05-1	13.9	15.4	Stiff brown and gray very silty clay (CL)	34			33	20	13					MC,AL	
C-05-1	15.4	15.9	Stiff brown tan and gray clay with silt (CL)	38			46	22	24					MC,AL	
C-06-1	0.0	1.2	Very soft brownish gray clay (CH)	121			62	22	40					MC,AL	
C-06-1	1.2	3.2	Very soft brownish gray clay (CH)	128			110	28	82					MC,AL	

Project Name: LDNR/CPRA/Oyster Bayou Marsh Restoration (CS-59)

Technical Responsibility: _____

Date: _____

Project ID: 16715-026-00

Title: _____

BORING NUMBER	DEPTH (FT)		SOIL DESCRIPTION	MOISTURE %	UNIT WEIGHT (PCF)		ATTERBERG LIMITS			COMPRESSION TEST				TEST TYPE	COMMENTS
	FROM	TO			WET	DRY	LL	PL	PI	TSF	STRAIN %	CONFINING PRESSURE (KSF)	TYPE FAILURE		
C-06-1	3.2	5.2	Very soft gray clay (CH)	128										MC	
C-06-1	5.2	7.2	Very soft brownish gray clay with trace silt seams (CL)	109			101	24	77					MC,AL	
C-06-1	7.2	8.3	Very soft brown and gray clay with shell layer (CH)	107			111	24	87					MC,AL	
C-06-1	11.2	13.2	Soft gray silty clay (CL)	34			36	13	23					MC,AL	
C-06-1	13.2	15.2	Soft gray silty clay (CL)	33			38	21	17					MC,AL	
C-06-1	15.2	16.8	Gray clay with silt (CL)	30			47	19	28					MC,AL	
C-07-1	0.0	2.0	Very soft brownish gray clay (CH)	119			115	30	85					MC,AL	
C-07-1	2.0	3.8	Very soft gray and brownish gray clay (CH)	103										MC	
C-07-1	3.8	5.8	Very soft gray and brownish gray clay (CH)	91										MC	
C-07-1	5.8	7.8	Very soft brown and gray clay with silt seams (CH)	116			115	32	83					MC,AL	
C-07-1	7.8	9.8	Soft gray very silty clay with trace shells (CL)	47			41	20	21					MC,AL	
C-07-1	9.8	11.8	Soft gray very silty clay (CL)	43			33	17	16					MC,AL	
C-07-1	11.8	13.8	Loose gray silty sand (SM)											M200	
C-07-1	13.8	15.8	Firm gray silty sand (SM)											M200	
C-07-1	15.8	17.8	Firm gray silty sand (SM)											M200	
C-07-1	17.8	19.8	Firm gray silty sand with 4" brown firm sand at 39-39.3 (SM)											M200	
C-10-1	0.0	2.0	Very soft brown and gray clay (CH)	122			116	35	81					MC,AL	
C-10-1	2.0	4.0	Very soft brown and gray clay with silt (CL)	115										MC	
C-10-1	4.0	6.0	Very soft brown and gray clay with silt seams (CH)	105			127	22	105					MC,AL	
C-10-1	6.0	6.9	Very soft brown and gray clay (CH)	117										MC	
C-10-1	8.0	10.0	Soft gray silty clay with trace shells (CL)	32			36	14	22					MC,AL	
C-10-1	10.0	12.0	Loose gray clayey silt with trace shells (CL-ML)	32			18	11	7					MC,AL	
C-10-1	12.0	14.0	Loose gray clayey silt (CL-ML)	32			23	17	6					MC,AL	

Project Name: LDNR/CPRA/Oyster Bayou Marsh Restoration (CS-59)

Technical Responsibility: _____

Date: _____

Project ID: 16715-026-00

Title: _____

BORING NUMBER	DEPTH (FT)		SOIL DESCRIPTION	MOISTURE %	UNIT WEIGHT (PCF)		ATTERBERG LIMITS			COMPRESSION TEST				TEST TYPE	COMMENTS
	FROM	TO			WET	DRY	LL	PL	PI	TSF	STRAIN %	CONFINING PRESSURE (KSF)	TYPE FAILURE		
C-10-1	14.0	16.0	Loose gray clayey silt (CL-ML)	30			22	16	6					MC,AL	
C-10-1	16.0	18.0	Loose - firm gray silty sand with fine sand and trace shells (SM)											M200	
C-11-1	0.0	2.1	Very soft brownish gray clay (CH)	114										MC	
C-11-1	2.1	4.1	Very soft brownish gray clay (CH)	133			130	39	91					MC,AL	
C-11-1	4.1	6.1	Very soft brown and gray clay (CH)	98										MC	
C-11-1	6.1	7.7	Soft brownish gray clay with 2" layer of shells (CH)	110			121	37	84					MC,AL	
C-11-1	8.1	10.1	Soft gray silty clay (CL)	43			44	19	25					MC,AL	
C-11-1	10.1	12.1	Soft gray silty clay (CH)				37	19	18					AL	
C-11-1	12.1	14.1	Loose gray silty sand (SM)											M200	
C-11-1	14.1	16.1	Loose gray silty sand (SM)											M200	
C-11-1	16.1	18.1	Loose gray silty sand (SM)											M200	
C-11-1	18.1	20.1	Firm gray silty sand (SM)											M200	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 4/26/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166	D2850	D422, C136 or C117								
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	Cohesion		Confining Pressure psi	Grain Size (%)							
				LL	PL	PI			U psf	UU psf		Gravel	Sand	Silt	Clay			% Passing #200	
C-9	1.2-3.2	Gray Fat CLAY with silt	99.7	94	28	66												(CH)	
C-9	5.2-6.6	Gray Fat CLAY	98.2	100	27	73												(CH)	
C-9	6.6-7.2	Gray Lean CLAY with silt, sand and shell	54.9	44	15	29											76.9	(CL)	See Grain Size curve
C-9	7.2-9.2	Gray Lean CLAY with silt, fine sand and shell	34.5	30	15	15												(CL)	
C-9	9.2-11.2	Gray Lean CLAY with silt and fine sand	31.9	28	15	13												(CL)	
C-9	11.2-13.2	Gray Lean CLAY with trace of silt and sand	32.3	34	15	19												(CL)	
C-9	15.2-15.6	Gray Lean CLAY with silt	33.5	35	18	17												(CL)	
C-9	15.6-16.5	Gray and Tan Lean CLAY with silt	35.6	47	21	26												(CL)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: *RM*

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/14/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166	D2850		D422, C136 or C117							
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-13-1	0-2.3	Gray Fat CLAY	104.9	83	24	59												(CH)	
C-13-1	2.3-4.3	Gray Fat CLAY with silt	113.4															(CH)	
C-13-1	4.3-6.3	Gray Fat CLAY with silt	111.9															(CH)	
C-13-1	6.3-8.3	Gray Fat CLAY	96.6	92	26	66												(CH)	
C-13-1	12.3-14.3	Gray Lean CLAY with silt and sand pockets	40.2	41	15	26												(CL)	
C-13-1	14.3-16.3	Gray Lean CLAY with sand and silt pockets	36.1	36	15	21												(CL)	
C-13-1	16.3-18.3	Gray Lean CLAY with silt and sand pockets	37.6															(CL)	
C-13-1	18.3-20.3	Gray SANDY Fat CLAY with silt and sand pockets	35.8	69	16	53											67.8	(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/10/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-14-1	0.3-2.3	Gray Fat CLAY	98.6															(CH)	
C-14-1	2.3-4.3	Gray Fat CLAY	103.7	114	26	88												(CH)	
C-14-1	4.3-6.3	Gray Fat CLAY with sand pockets and shells	89.9															(CH)	
C-14-1	6.3-8.3	Gray Fat CLAY with sand and shell pockets	87.0	109	27	82												(CH)	
C-14-1	8.3-10.3	Gray Fat CLAY	58.9	59	18	41												(CH)	
C-14-1	10.3-12.3	Gray Fat CLAY	52.5															(CH)	
C-14-1	12.3-14.3	Gray Fat CLAY	45.1															(CH)	
C-14-1	14.3-16.3	Gray Lean CLAY	45.6	48	15	33												(CL)	
C-14-1	16.3-18.3	Gray Fat CLAY with silt pockets	48.3	50	17	33												(CH)	
C-14-1	18.3-20.3	Gray Fat CLAY with sand pockets	48.0	50	17	33											86.7	(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/14/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-15-1	0-2	Gray Fat CLAY	106.7	87	24	63												(CH)	
C-15-1	2-4	Gray Fat CLAY	109.4															(CH)	
C-15-1	4-6	Gray Fat CLAY	101.1															(CH)	
C-15-1	6-8	Gray Fat CLAY with silty sand pockets	96.0															(CH)	
C-15-1	8-8.5	Gray SANDY Lean CLAY with sand and shells	37.1	32	17	15											56.3	(CL)	
C-15-1	8.5-9.25	Gray SANDY Lean CLAY with silt and shells	29.3														50.1	(CL)	
C-15-1	9.25-10	Gray Lean CLAY	54.7	48	19	29												(CL)	
C-15-1	10-12	Gray Fat CLAY	57.3															(CH)	
C-15-1	12-14	Gray Fat CLAY	57.0	65	18	47												(CH)	
C-15-1	14-16	Gray Fat CLAY	50.1															(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/10/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-16-1	0-2.1	Gray Fat CLAY	113.0	98	25	73												(CH)	
C-16-1	4.1-6.1	Gray Fat CLAY	102.8															(CH)	
C-16-1	6.1-7.7	Gray Fat CLAY	120.9	117	28	89												(CH)	
C-16-1	7.7-8.1	Gray Lean CLAY with sand and shell pockets	37.4															(CL)	
C-16-1	8.1-10.1	Gray Lean CLAY with shell pockets and trace of sand	46.8	38	16	22												(CL)	
C-16-1	10.1-12.1	Gray Lean CLAY with sand and shell pockets	44.8	45	15	30												(CL)	
C-16-1	12.1-14.1	Gray Fat CLAY	58.7															(CH)	
C-16-1	14.1-16.1	Gray Fat CLAY	59.3															(CH)	
C-16-1	16.1-18.1	Gray Fat CLAY	56.9															(CH)	
C-16-1	18.1-20.1	Gray Fat CLAY	50.7	54	18	36												(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 4/26/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117					% Passing #200	
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)							
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-17-2	0-2	Dark Gray and Gray Fat CLAY with silt	116.0	78	22	56												(CH)	
C-17-2	3.7-5.7	Gray Fat CLAY with trace of silt and trace of shell	59.5	67	19	48												(CH)	
C-17-2	7.7-9.7	Gray Fat CLAY with trace of shell and trace of sand	60.2	65	18	47										91.4		(CH)	See Grain Size curve
C-17-2	9.7-11.7	Gray Lean CLAY with sand and shell	36.4	41	15	26										56.5		(CL)	
C-17-2	13.7-15.7	Gray Fat CLAY with trace of silt	86.6	103	25	78												(CH)	
C-17-2	17.7-19.7	Gray Fat CLAY with trace of shell	50.3	55	17	38												(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/14/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-18-1	0-2	Gray Fat CLAY with sand pockets	108.9	103	29	74												(CH)	
C-18-1	2-4	Gray Fat CLAY	118.0															(CH)	
C-18-1	4-6	Gray Fat CLAY	124.2															(CH)	
C-18-1	6-8	Gray Fat CLAY	101.2															(CH)	
C-18-1	8-10	Gray Lean CLAY with shells and sand	34.0	36	15	21												(CL)	
C-18-1	10-12	Gray Lean CLAY with sand pockets and shells	36.7	35	17	18												(CL)	
C-18-1	12-14	Gray Fat CLAY	53.6															(CH)	
C-18-1	16-18	Gray Fat CLAY	56.0															(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 4/26/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117						
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)						% Passing #200	
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-19	0-2	Gray Fat CLAY with silt	123.5	102	25	77												(CH)	
C-19	4-6	Gray Fat CLAY with trace of silt	112.9	111	25	86												(CH)	
C-19	6-8	Gray Fat CLAY with trace of silt and trace of shell	87.8	120	27	93												(CH)	
C-19	8-10	Gray Lean CLAY with silt, sand and shell	41.2	42	15	27											48.5	(CL)	See Grain Size curve
C-19	10-12	Gray Fat CLAY with trace of silt and trace of shell	49.6	58	18	40												(CH)	
C-19	14-16	Gray Fat CLAY	59.0	64	19	45												(CH)	
C-19	18-20	Gray Fat CLAY	51.1	56	17	39												(CH)	

Project: Oyster Bayou Marsh Creation

Technical Responsibility: RM

Quality Assurance Officer

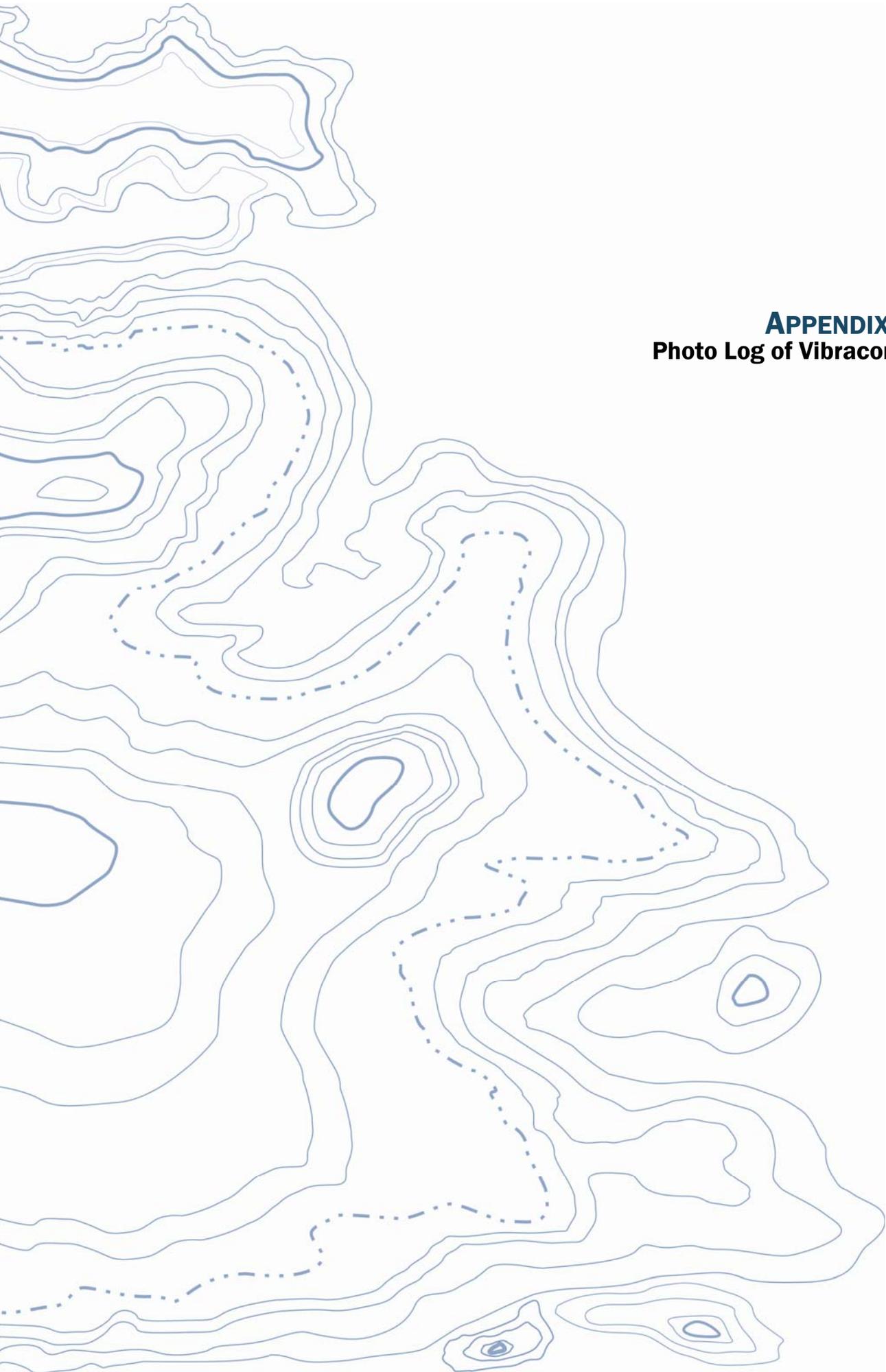
Client: GeoEngineers

Project No.: B13-037

PM: RM

Date of Issue: 5/14/2013

Boring No.	Depth (ft)	Classification	ASTM DESIGNATION													USCS	Remarks		
			D2216	D4318			D2166		D2166		D2850		D422, C136 or C117					% Passing #200	
			ω %	Atterberg Limits			γ _{wet} pcf	γ _{dry} pcf	U psf	UU psf	Confining Pressure psi	Grain Size (%)							
	LL	PL	PI						Gravel	Sand	Silt	Clay							
C-20-1	0-2	Gray Fat CLAY	117.6	97	24	73												(CH)	
C-20-1	2-4	Gray Fat CLAY	117.0															(CH)	
C-20-1	4-6	Gray Fat CLAY	121.4															(CH)	
C-20-1	6-8	Gray Fat CLAY	93.8															(CH)	
C-20-1	8-9	Gray CLAYEY SAND with silt and shells	35.3														48.3	(SC)	
C-20-1	10-12	Gray Lean CLAY with silt pockets and sand	40.5	41	16	25												(CL)	
C-20-1	12-14	Gray Fat CLAY with sand and shell pockets	48.1	51	17	34												(CH)	
C-20-1	14-16	Gray Fat CLAY	52.9															(CH)	
C-20-1	16-18	Gray Fat CLAY	56.0															(CH)	



APPENDIX B
Photo Log of Vibracores

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-01-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-1

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-01-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-2

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-01-2

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-3

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-01-2

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-4

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-01-2

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-5

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-02-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-6

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F6 modified on Jul 10, 2013 - 3:25pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-02-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-7

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-02-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-8

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-02-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-9

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F9 modified on Jul 10, 2013 - 3:31pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-02-1 & C-03-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-10

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-03-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-11

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF11 modified on Jul 10, 2013 - 3:33pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-03-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-12

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F12 modified on Jul 10, 2013 - 3:34pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-03-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-13

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-03-1 & C-04-1

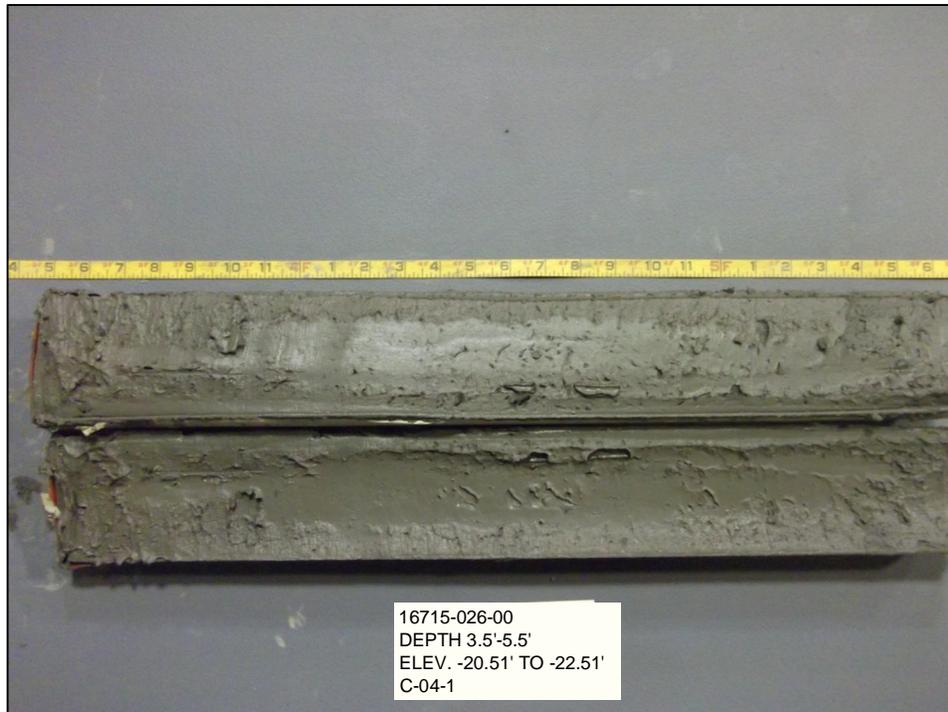
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-14

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF14 modified on Jul 10, 2013 - 3:35pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-04-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-15

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F15 modified on Jul 01, 2013 - 6:02am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-04-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-16

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF16 modified on Jul 01, 2013 - 6:04am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-04-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-17

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF17 modified on Jul 01, 2013 - 6:06am

VT : KMC



NOTES:

- 1. DEPTH AS MEASURED BELOW MUDLINE.
- 2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-04-1 & C-05-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-18

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F18 modified on Jul 10, 2013 - 3:36pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-05-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-19

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF19 modified on Jul 10, 2013 - 3:37pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-05-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-20

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-05-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-21

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F21 modified on Jul 10, 2013 - 3:39pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-05-1 & C-06-1

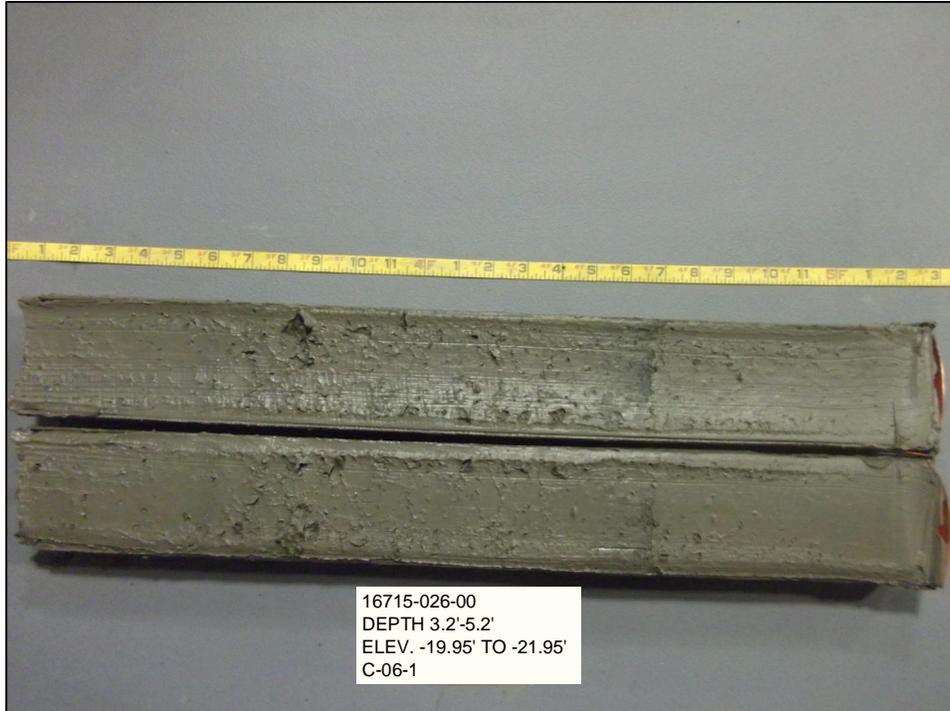
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-22

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F22 modified on Jul 10, 2013 - 3:40pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-06-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-23

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F23 modified on Jul 10, 2013 - 3:47pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-06-1

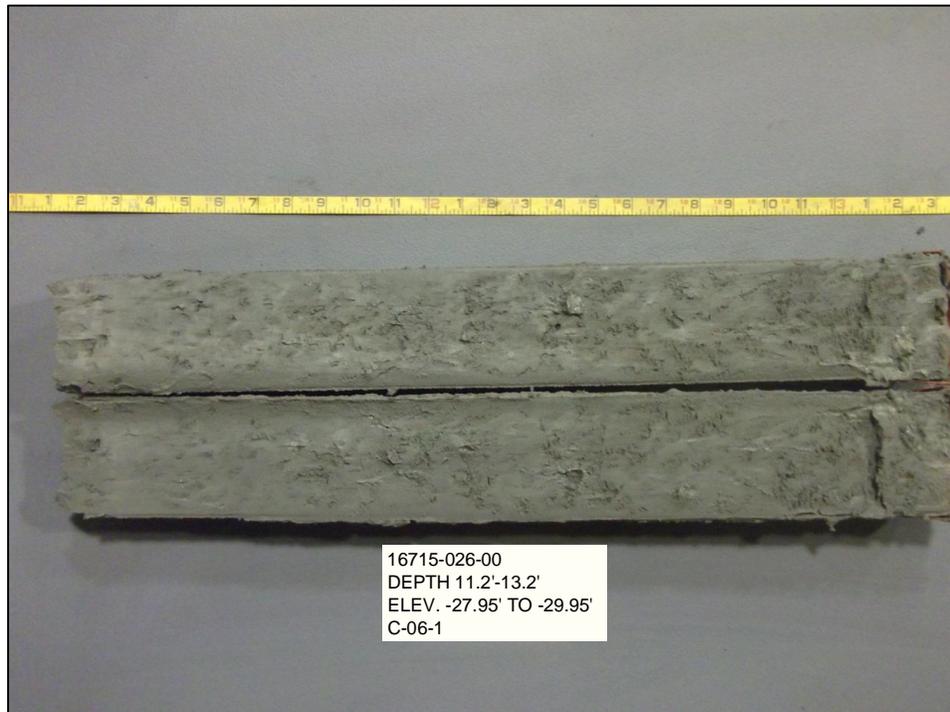
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-24

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F24 modified on Jul 10, 2013 - 3:41pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-06-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-25

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-06-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-26

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-07-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-27

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F27 modified on Jul 10, 2013 - 3:50pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-07-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-28

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F28 modified on Jul 10, 2013 - 3:51pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-07-1

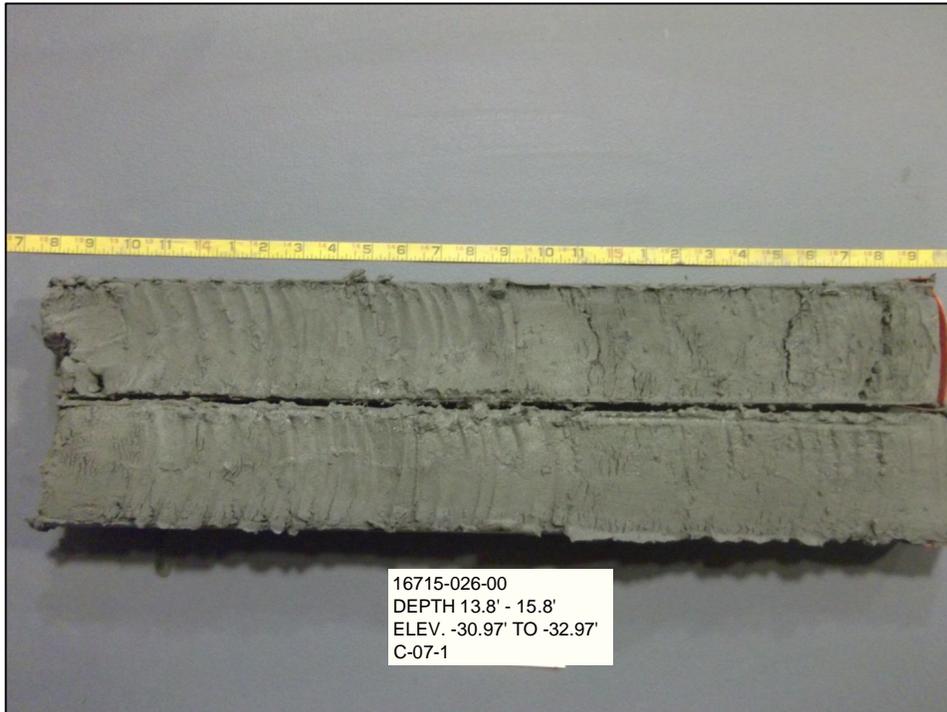
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-29

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F29 modified on Jul 10, 2013 - 3:52pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-07-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-30

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF30 modified on Jul 10, 2013 - 3:52pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-07-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-31

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-08-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-32

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-08-1

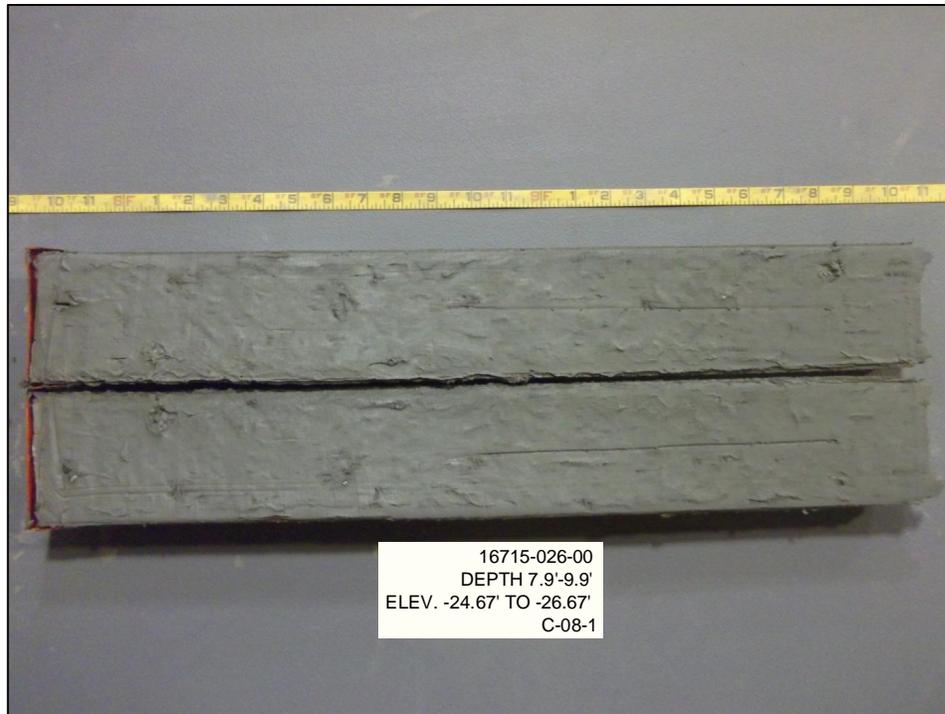
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-33

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF33 modified on Jul 10, 2013 - 3:57pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-08-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-34

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF34 modified on Jul 10, 2013 - 3:59pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-08-1

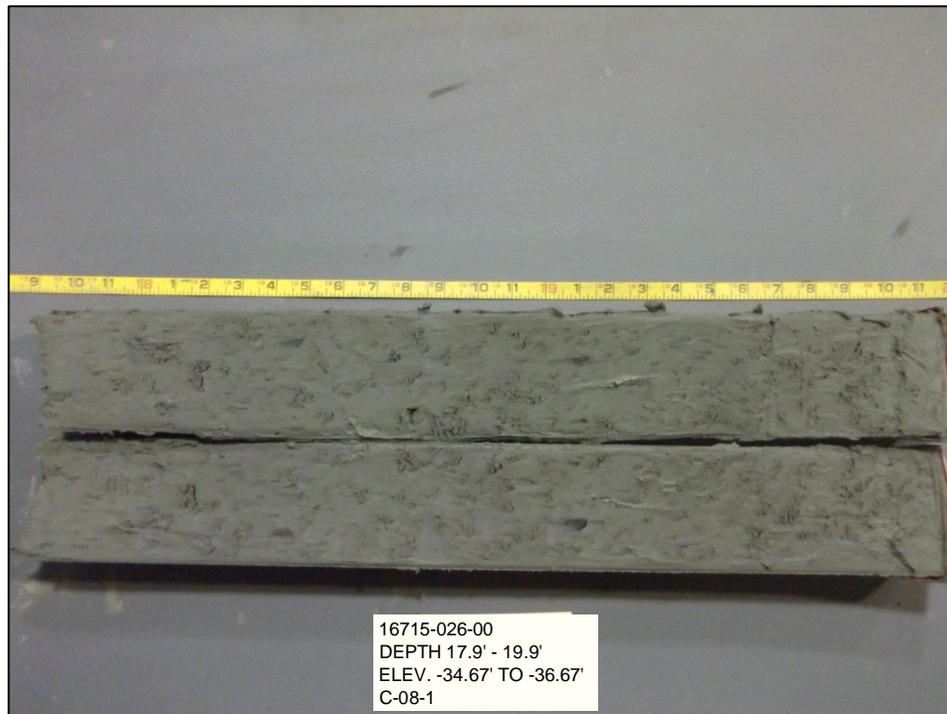
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-35

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF35 modified on Jul 10, 2013 - 4:09pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-08-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-36

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F36 modified on Jul 10, 2013 - 4:10pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-09-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-37

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF37 modified on Jul 10, 2013 - 4:10pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-09-1

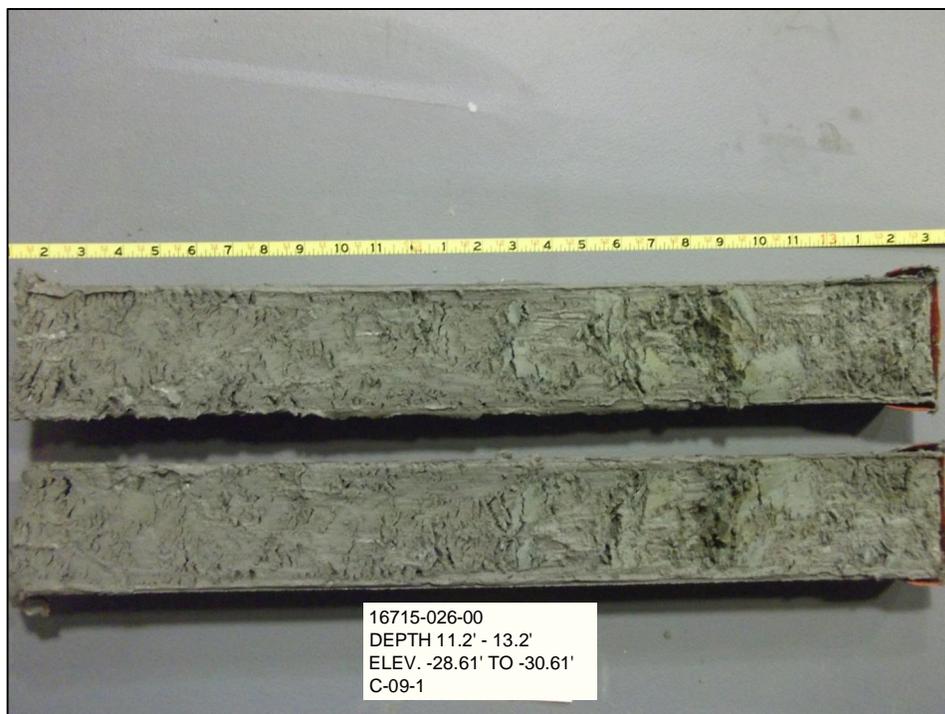
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-38

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF38 modified on Jul 10, 2013 - 4:11pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

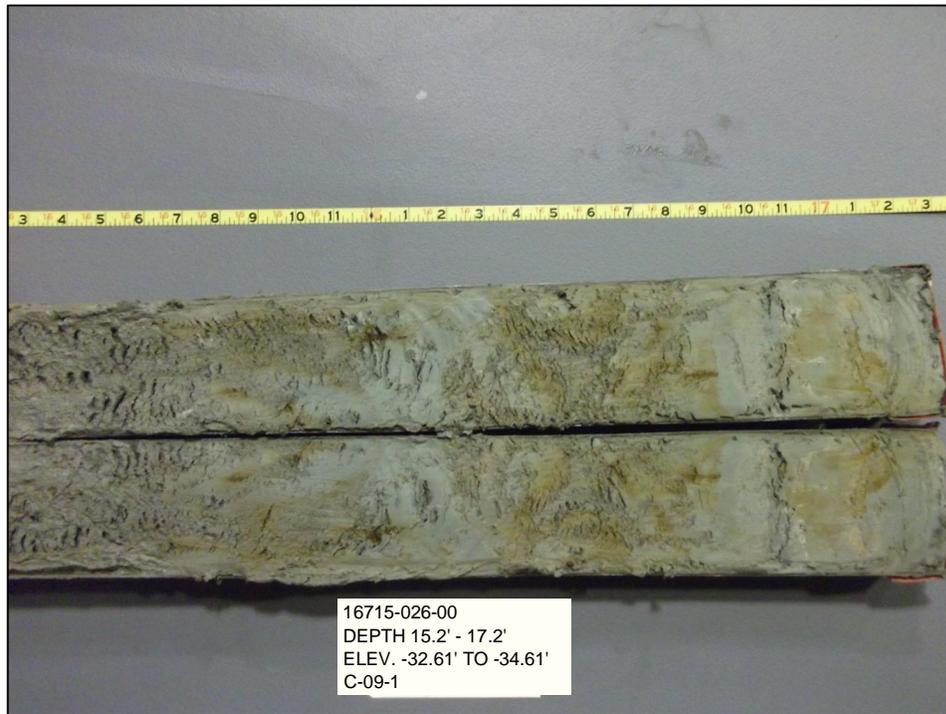
PHOTO LOG
C-09-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-39

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-09-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-40

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-40 modified on Jul 10, 2013 - 4:14pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-10-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-41

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-41 modified on Jul 10, 2013 - 4:16pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-10-1

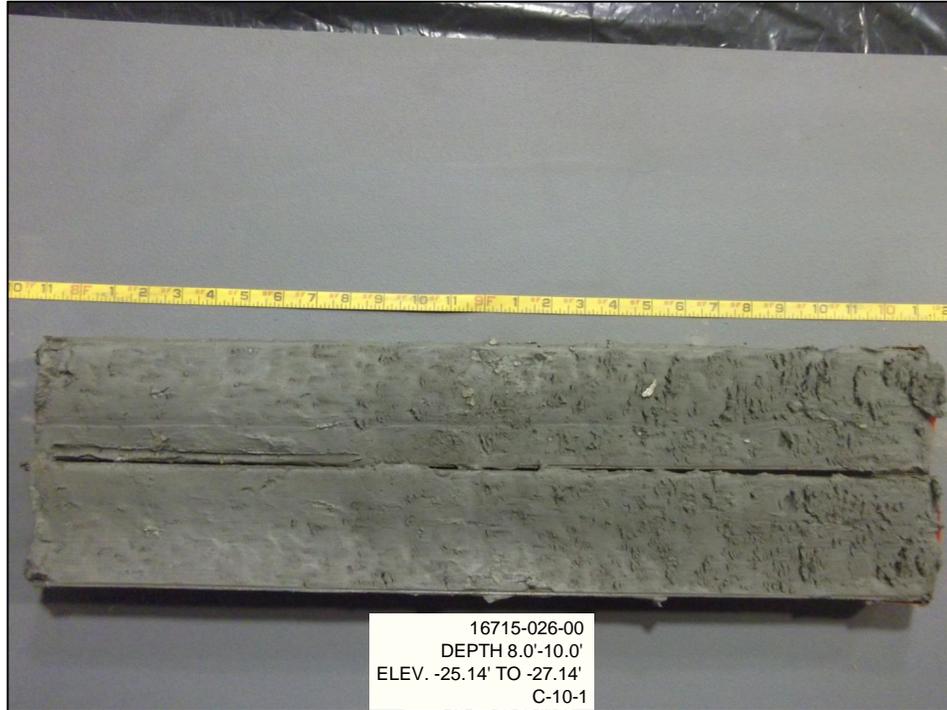
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-42

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-42 modified on Jul 10, 2013 - 4:17pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-10-1

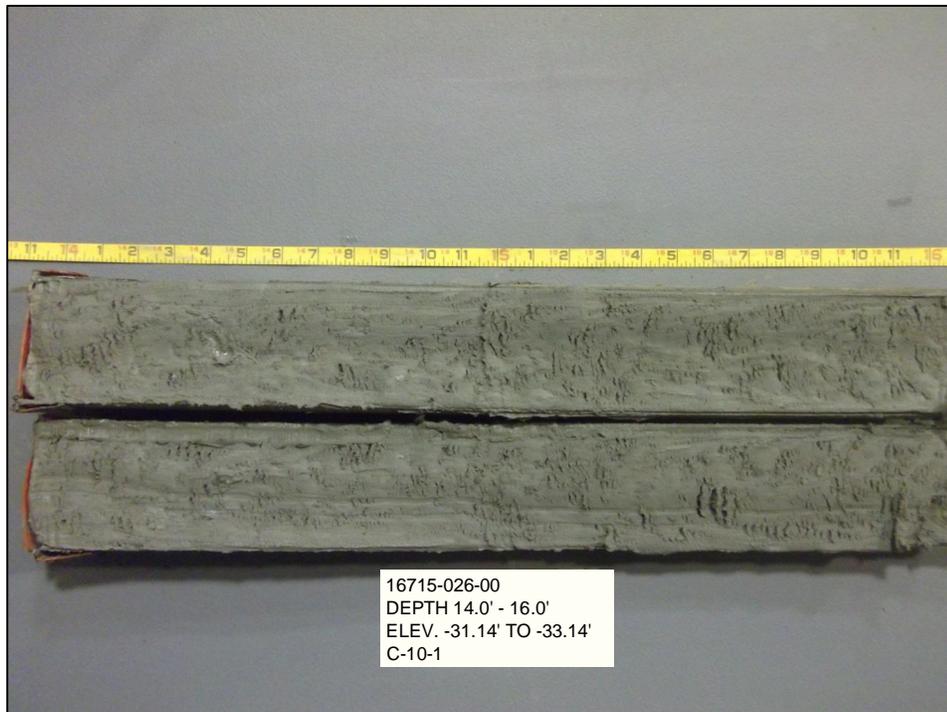
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-43

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-43 modified on Jul 10, 2013 - 4:17pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-10-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-44

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-44 modified on Jul 10, 2013 - 4:18pm

VT : KMC



NOTES:

- 1. DEPTH AS MEASURED BELOW MUDLINE.
- 2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-10-1 & C-11-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-45

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-45 modified on Jul 10, 2013 - 4:19pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-11-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-46

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-11-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-47

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-47 modified on Jul 10, 2013 - 4:21pm

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

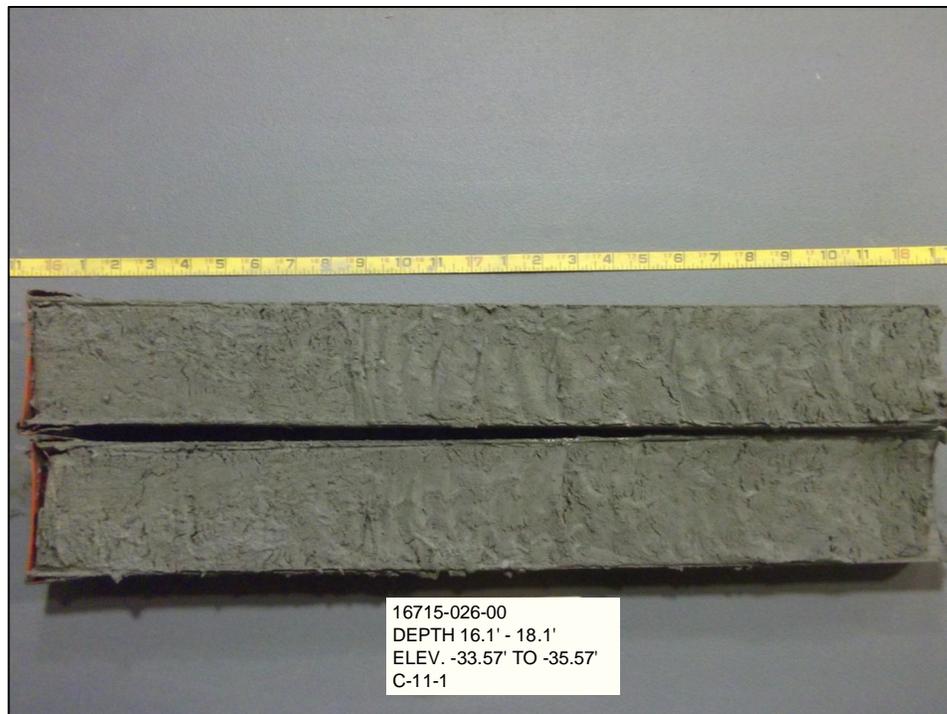
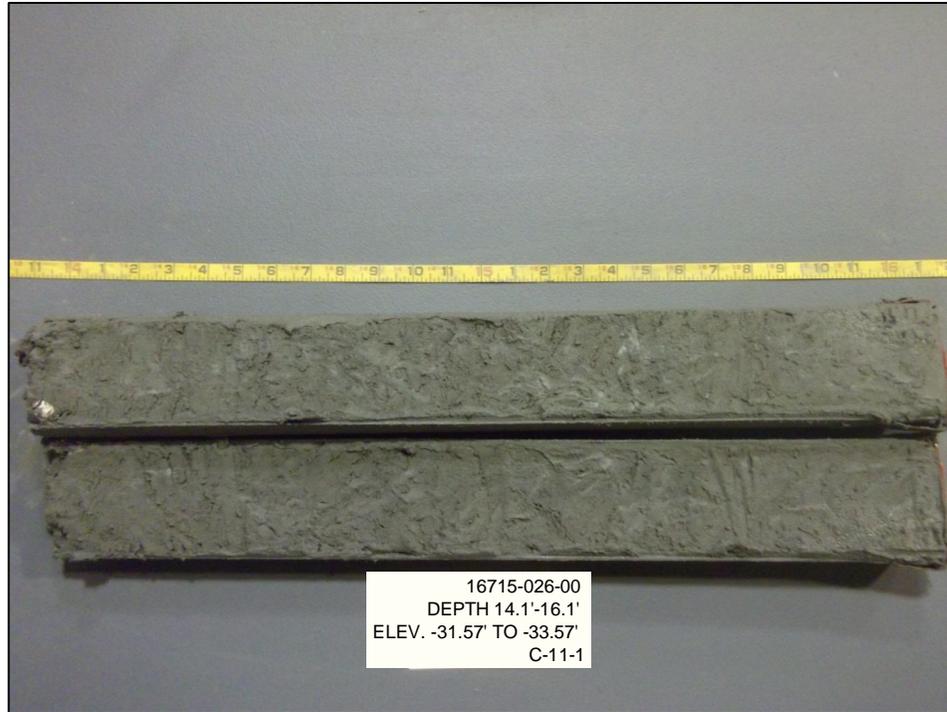
PHOTO LOG
C-11-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-48

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-11-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-49

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF-49 modified on Jul 10, 2013 - 4:22pm

VT : KMC



NOTES:

- 1. DEPTH AS MEASURED BELOW MUDLINE.
- 2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-11-1 & C-12-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-50

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-12-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-51

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-12-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-52

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF52 modified on Jul 11, 2013 - 6:02am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-12-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-53

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-12-1

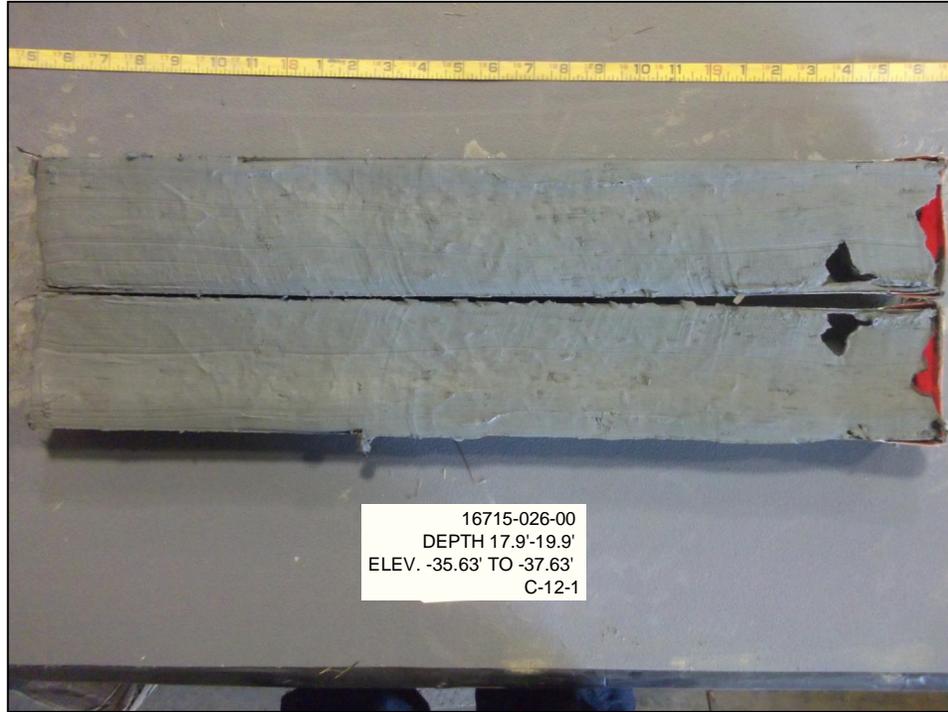
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-54

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF54 modified on Jul 11, 2013 - 6:04am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-12-1 & C-13-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-55

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF55 modified on Jul 11, 2013 - 6:05am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-13-1

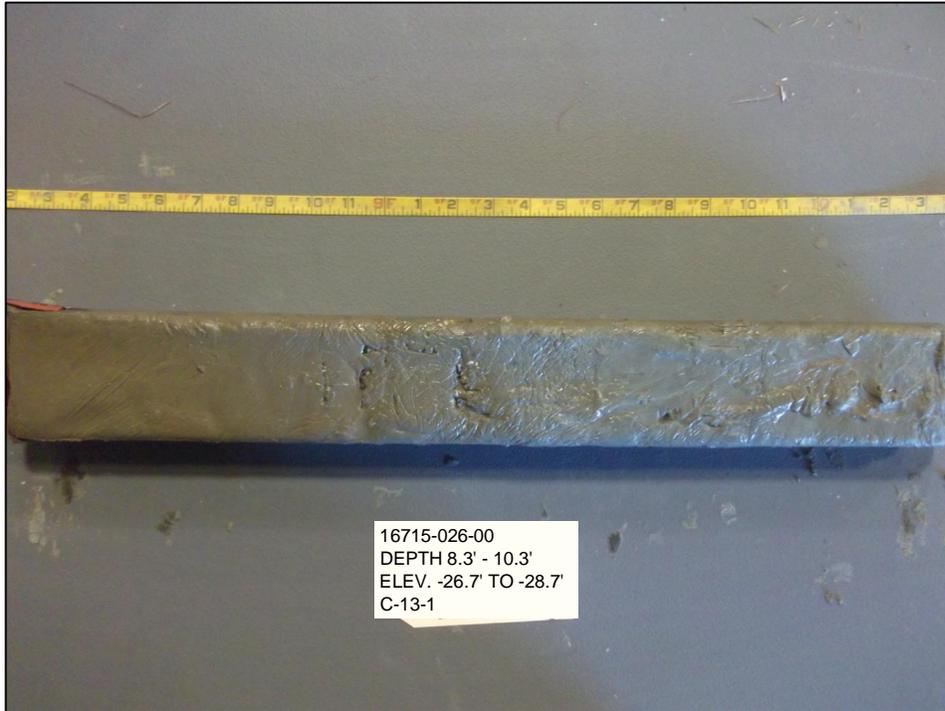
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-56

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F56 modified on Jul 11, 2013 - 6:07am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-13-1

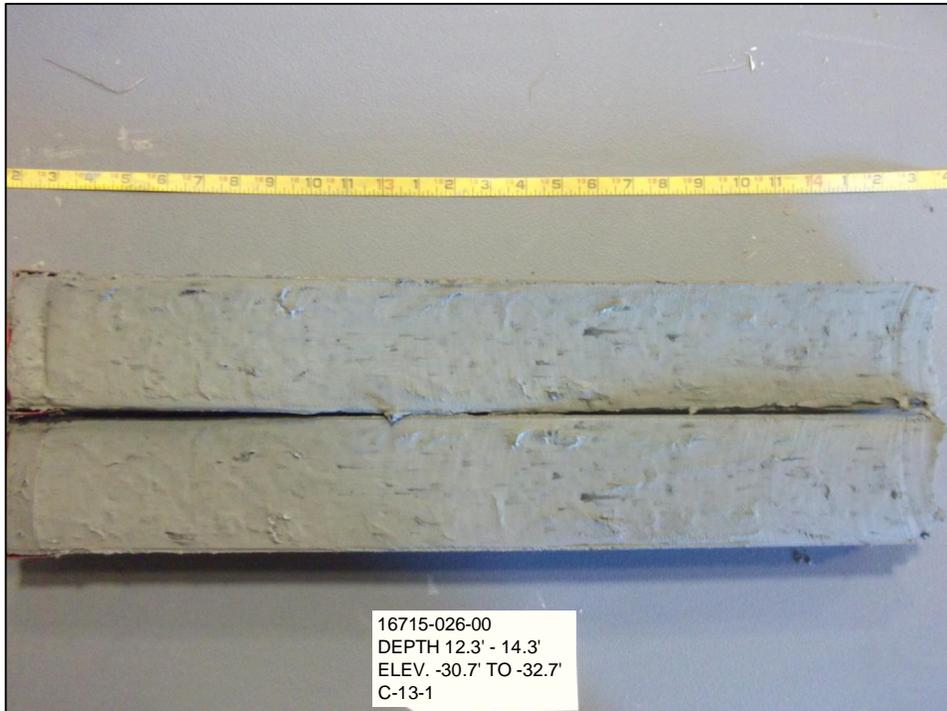
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-57

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F57 modified on Jul 11, 2013 - 6:07am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-13-1

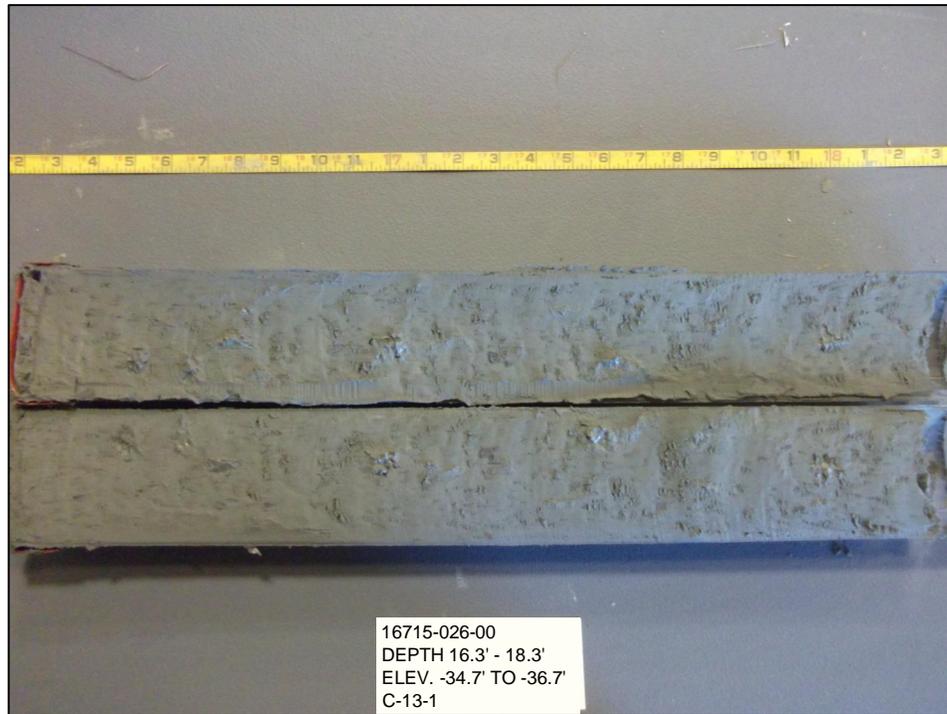
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-58

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF58 modified on Jul 11, 2013 - 6:09am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-13-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-59

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF59 modified on Jul 11, 2013 - 6:11am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-13-1 & C-14-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-60

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F60 modified on Jul 11, 2013 - 6:12am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-14-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-61

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F61 modified on Jul 11, 2013 - 6:13am

VT : KMC



16715-026-00
DEPTH 6.3'-8.3'
ELEV. -24.23' TO -26.23'
C-14-1



16715-026-00
DEPTH 8.3' - 10.3'
ELEV. -26.23' TO -28.23'
C-14-1

NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-14-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-62

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F62 modified on Jul 11, 2013 - 6:14am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-14-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-63

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-14-1

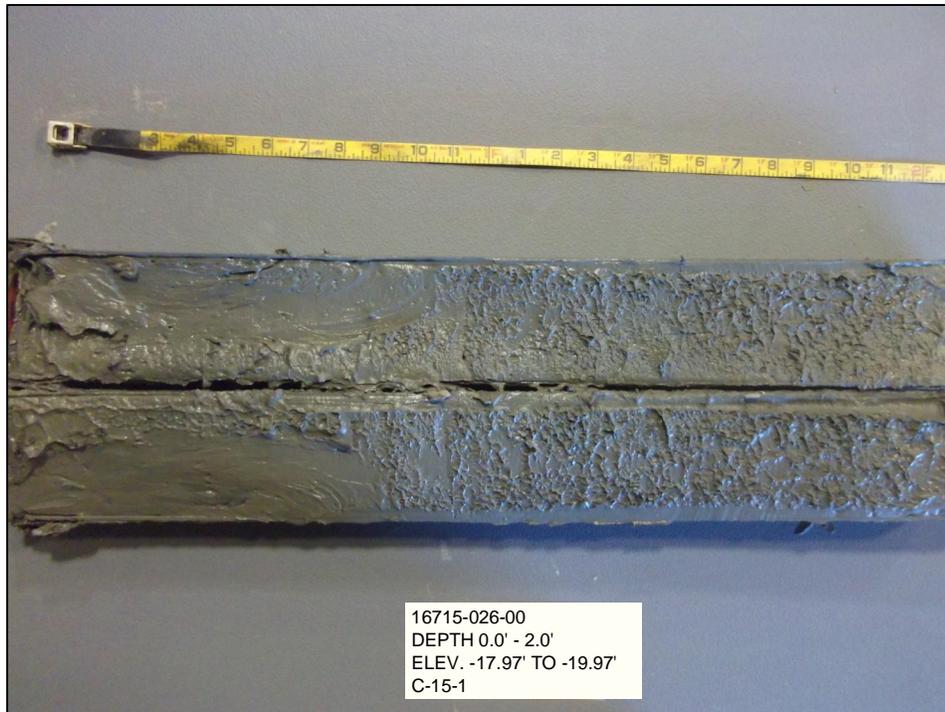
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-64

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F64 modified on Jul 11, 2013 - 6:16am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-14-1 & C-15-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-65

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F65 modified on Jul 11, 2013 - 6:17am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-15-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-66

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F66 modified on Jul 11, 2013 - 6:17am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-15-1

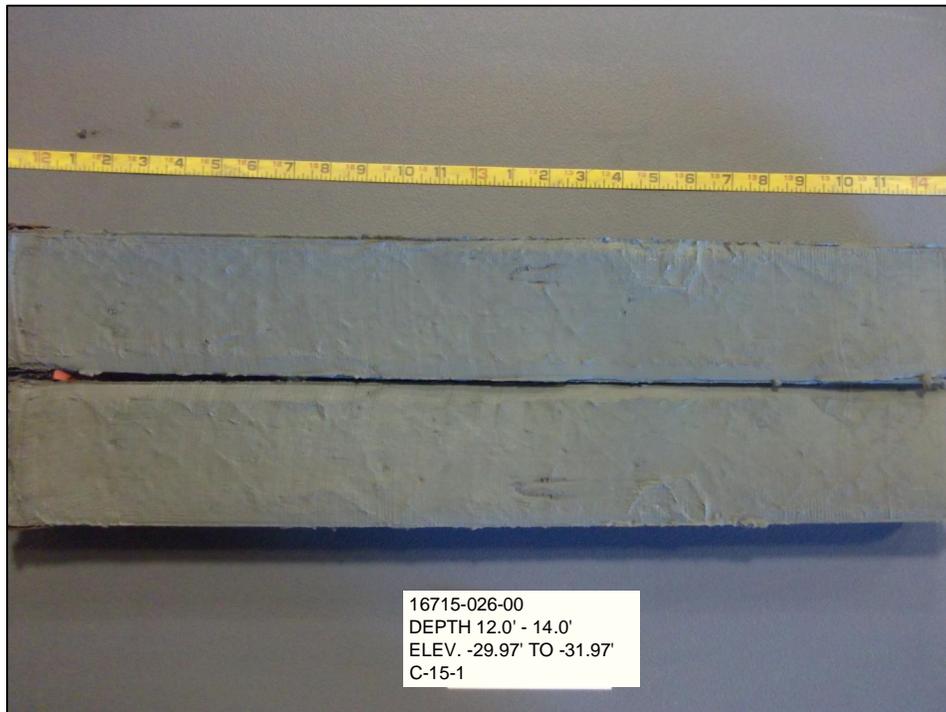
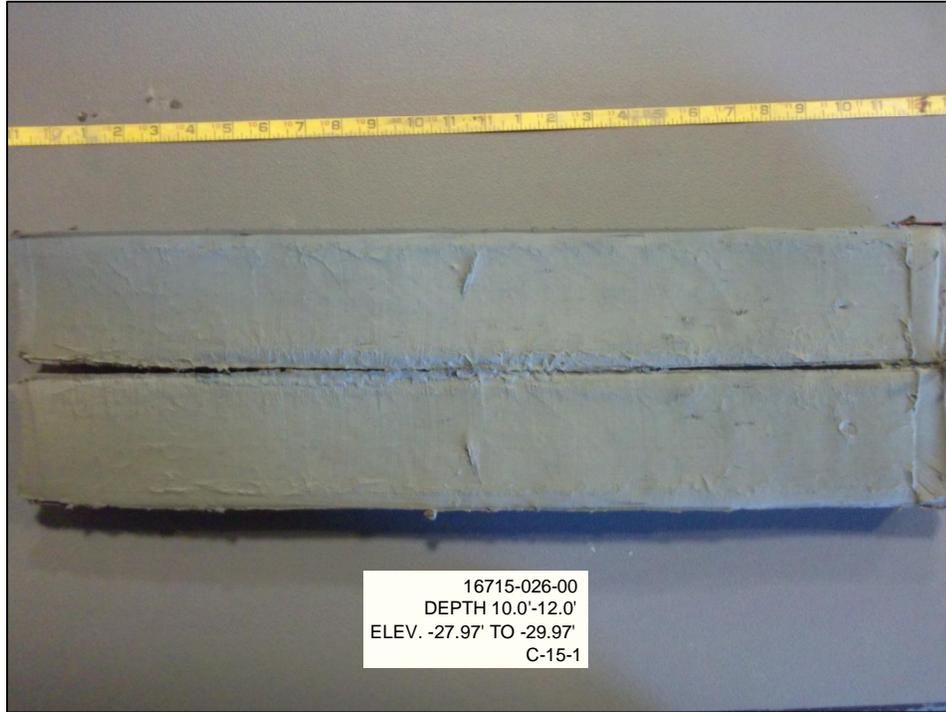
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-67

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F67 modified on Jul 11, 2013 - 6:18am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-15-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-68

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-15-1 & C-16-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-69

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-16-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-70

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF70 modified on Jul 11, 2013 - 6:20am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-16-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-71

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

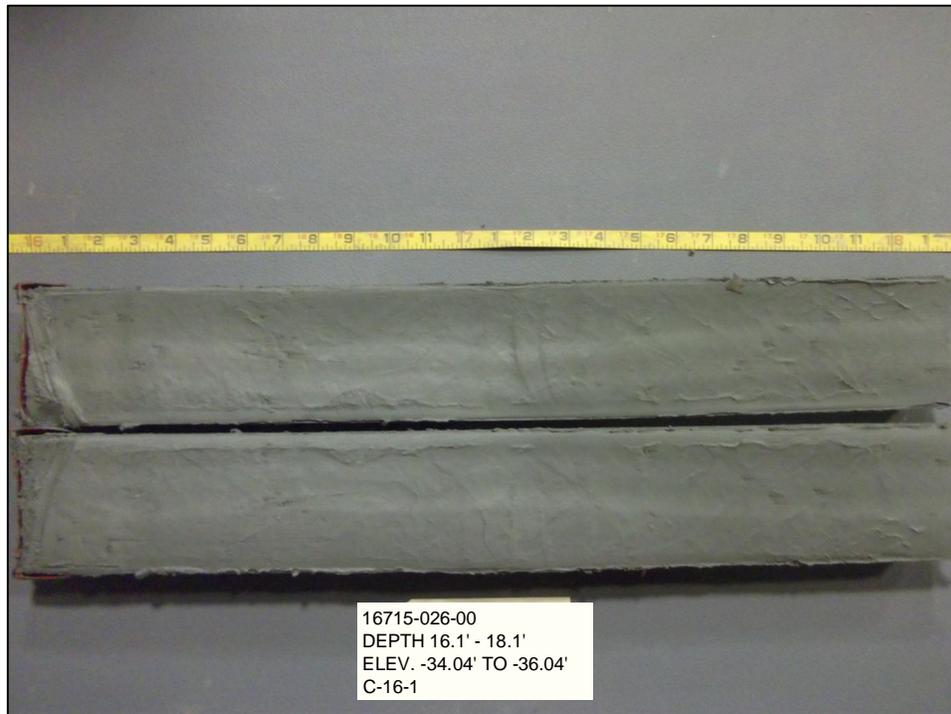
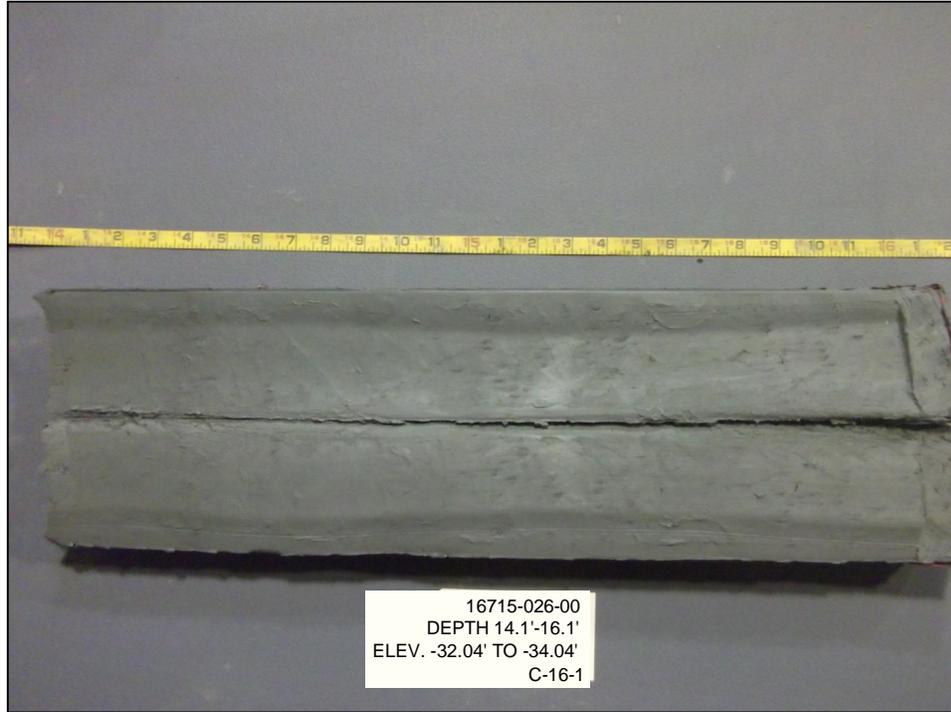
PHOTO LOG
C-16-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-72

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-16-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-73

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F73 modified on Jul 11, 2013 - 6:22am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-16-1 & C-17-2

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-74

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-17-2

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-75

P:\16715\16715026\00\CAD\Vibracore Samples.dwg\TAB\F75 modified on Jul 11, 2013 - 6:24am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-17-2

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-76

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-17-2

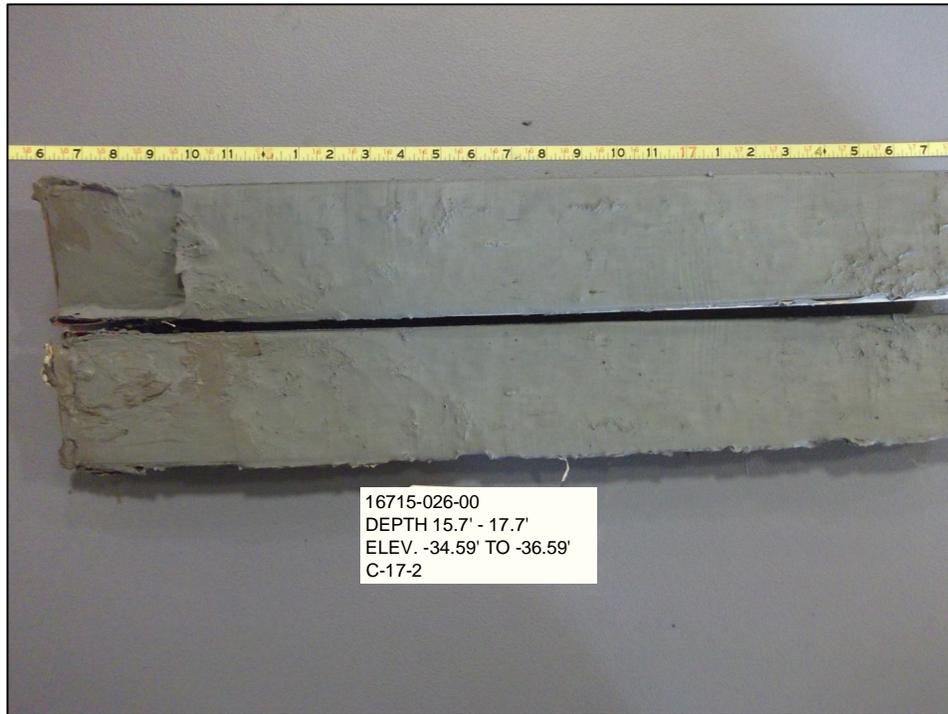
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-77

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF77 modified on Jul 11, 2013 - 6:25am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-17-2

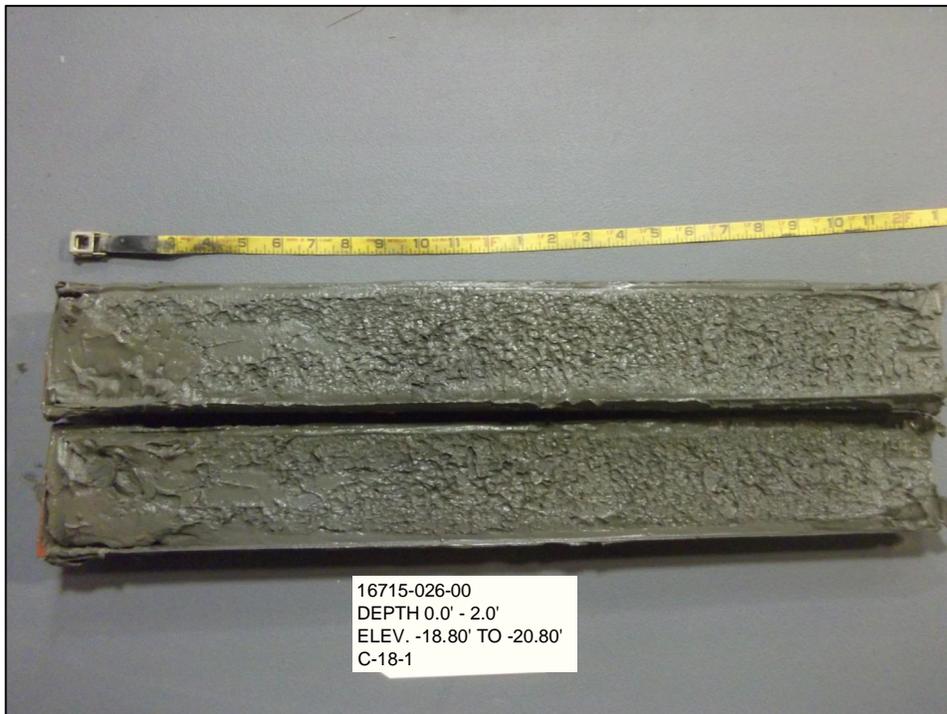
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-78

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F78 modified on Jul 11, 2013 - 6:26am

VT : KMC



NOTES:

- 1. DEPTH AS MEASURED BELOW MUDLINE.
- 2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-17-2 & C-18-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-79

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F79 modified on Jul 11, 2013 - 6:27am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-18-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-80

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F80 modified on Jul 11, 2013 - 6:28am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-18-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-81

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-18-1

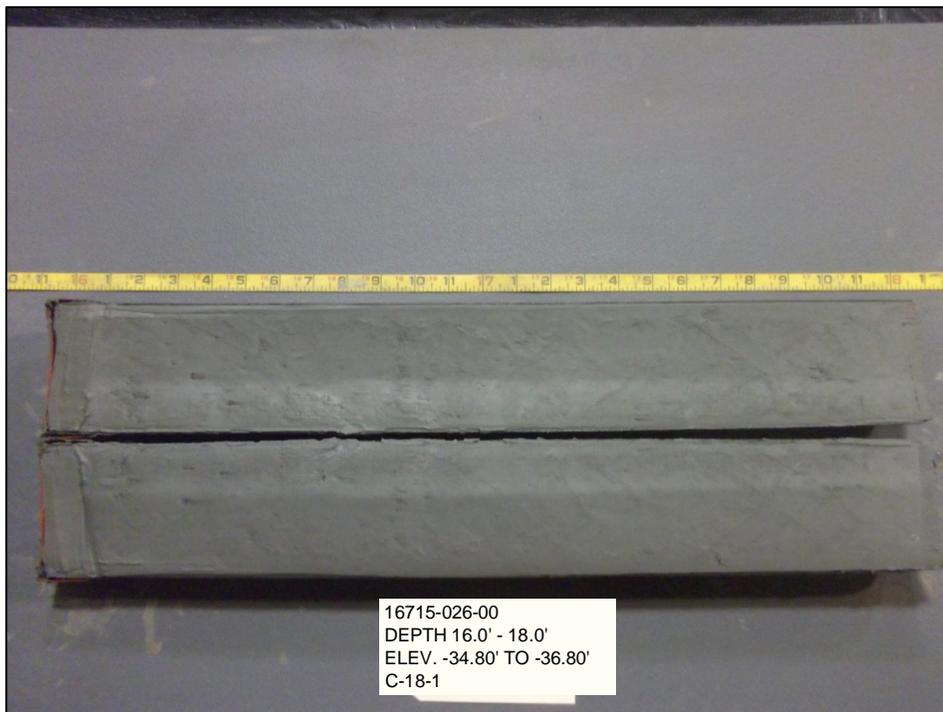
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-82

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F82 modified on Jul 11, 2013 - 6:29am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-18-1

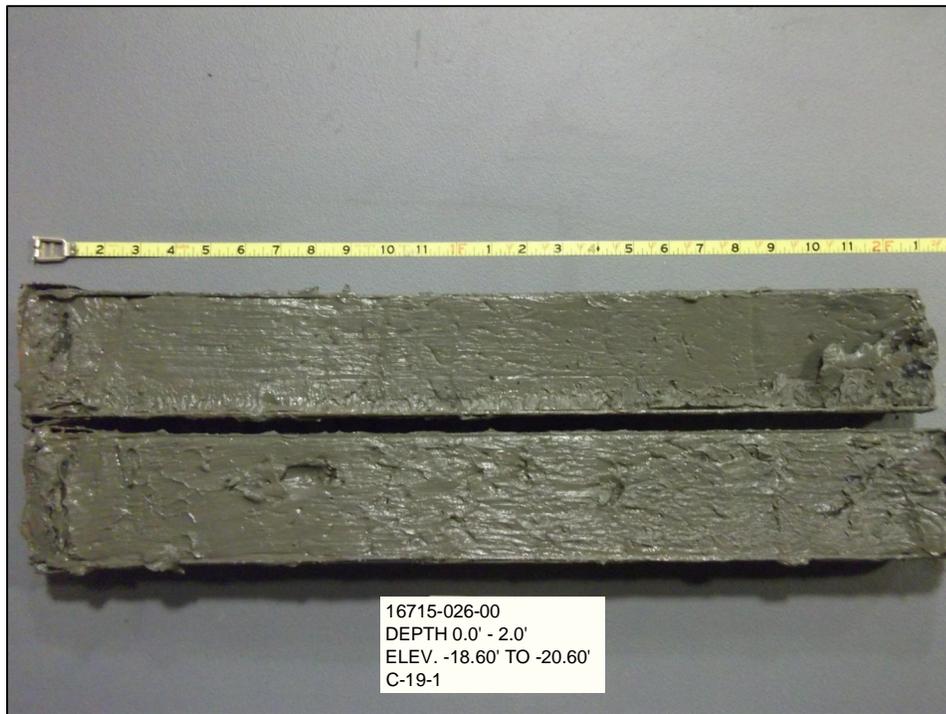
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-83

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F83 modified on Jul 11, 2013 - 8:59am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-18-1 & C-19-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-84

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F84 modified on Jul 11, 2013 - 6:30am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-19-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-85

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F85 modified on Jul 11, 2013 - 9:00am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-19-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-86

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F86 modified on Jul 11, 2013 - 6:31am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-19-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-87

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F87 modified on Jul 11, 2013 - 6:32am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-19-1 & C-20-1

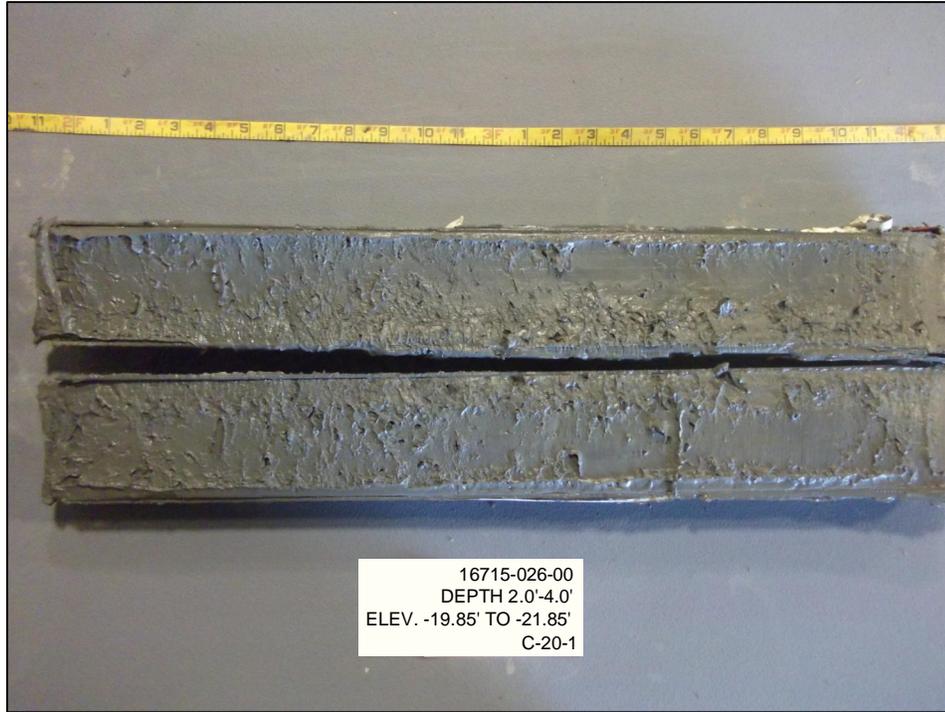
Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-88

P:\16715026\00\CAD\Vibracore Samples.dwg\TABF88 modified on Jul 11, 2013 - 6:33am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-20-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-89

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F89 modified on Jul 11, 2013 - 6:34am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-20-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-90

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F90 modified on Jul 11, 2013 - 6:35am

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-20-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-91

VT : KMC



NOTES:

1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-20-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-92

P:\16715026\00\CAD\Vibracore Samples.dwg\TAB\F92 modified on Jul 11, 2013 - 6:36am

VT : KMC



NOTES:

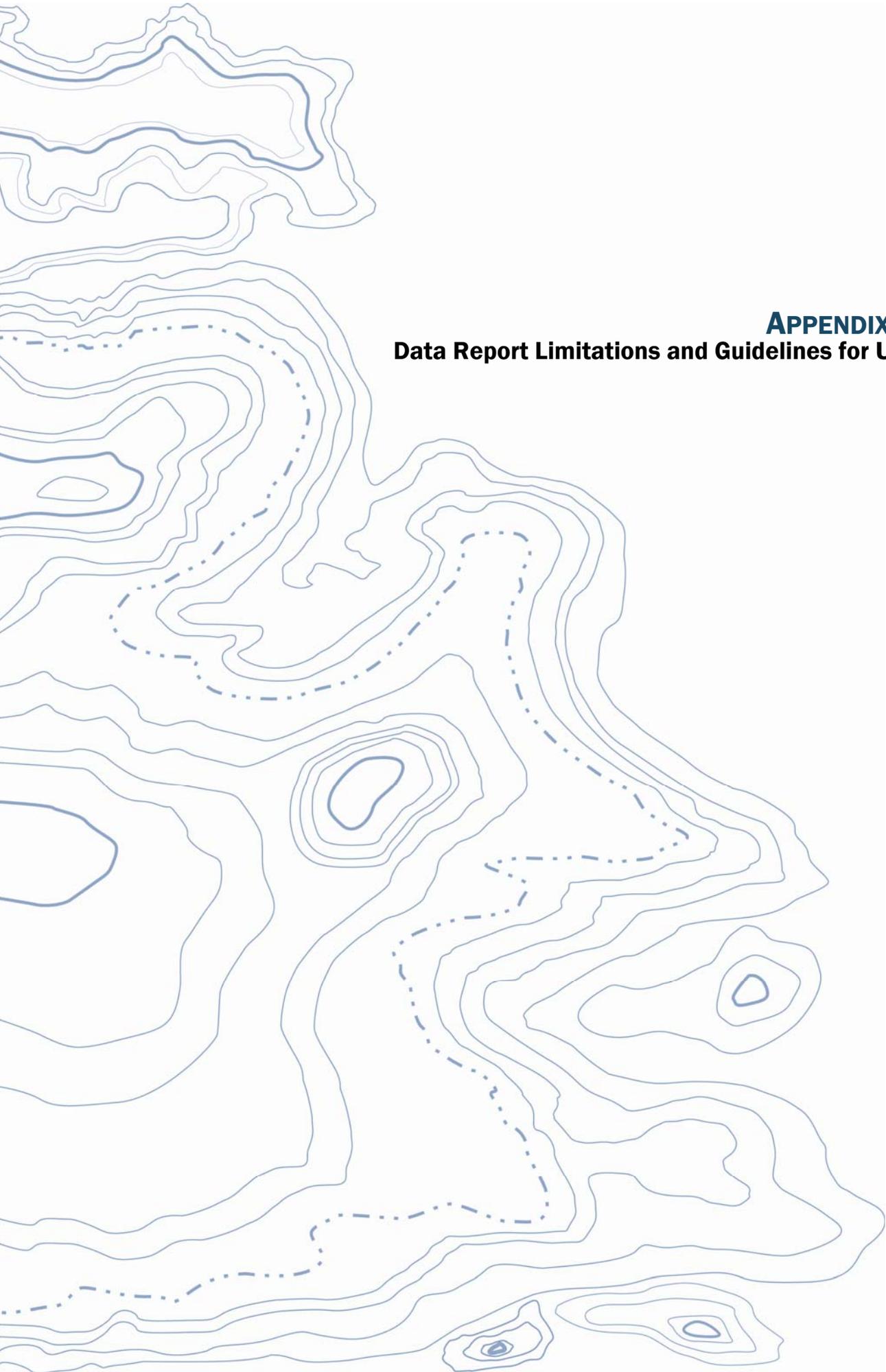
1. DEPTH AS MEASURED BELOW MUDLINE.
2. ELEVATION ADJUSTED TO TIDE VARIATIONS (NAVD88, FEET)

PHOTO LOG
C-20-1

Oyster Bayou Marsh Restoration (CS-59)
Cameron Parish, Louisiana



Figure B-93



APPENDIX C
Data Report Limitations and Guidelines for Use

APPENDIX C

DATA REPORT LIMITATIONS AND GUIDELINES FOR USE

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the State of Louisiana, Office of Coastal Protection and Restoration (CPRA), and their authorized agents and regulatory agencies for the Oyster Bayou Marsh Restoration (CS-59) project located in Cameron Parish, Louisiana. The information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. No party other than CPRA, may rely on the product of our services unless we agree to such reliance in advance and in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this data report was prepared. Use of this data report is not recommended for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Data report Is Based on a Unique Set of Project-Specific Factors

This data report has been prepared for the Oyster Bayou Marsh Restoration (CS-59) project in Cameron Parish, Louisiana. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and data report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this data report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this data report include those that affect:

- the function of the proposed dikes;
- elevation, configuration, location, or orientation of the proposed marsh;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this data report, we recommend that GeoEngineers be given the opportunity to review our interpretations. Based on that review, we can provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic data report is based on conditions that existed at the time the study was performed. The findings and conclusions of this data report may be affected by the passage of time, by man-made events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. If more than a few months have passed since issuance of our data report or work product, or if any of the described events may have occurred, please contact GeoEngineers before applying this data report for its intended purpose so that we may evaluate whether changed conditions affect the continued reliability or applicability of our data.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies the specific subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an informed opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this data report. Our data report, and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Services Data report Recommendations Are Not Final

Any construction recommendations developed based on this data report are preliminary and should not be considered final. GeoEngineers' data can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers is unable to assume responsibility for the recommendations in this data report without performing construction observation.

We recommend that you allow sufficient monitoring, testing and consultation during construction by GeoEngineers to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes if the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Services Data report Could Be Subject to Misinterpretation

Misinterpretation of this data report by members of the design team or by contractors can result in costly problems. GeoEngineers can help reduce the risks of misinterpretation by conferring with appropriate members of the design team after submitting the data report, reviewing pertinent elements of the design team's plans and specifications, participating in pre-bid and preconstruction conferences, and providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. The logs included in this data report should never

be redrawn for inclusion in architectural or other design drawings. Photographic or electronic reproduction is acceptable, but separating logs from the data report can create a risk of misinterpretation.

Give Contractors a Complete Data report and Guidance

To help prevent costly problems associated with unanticipated subsurface conditions, we recommend giving contractors the complete geotechnical engineering or geologic data report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the data report's accuracy is limited. In addition, encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer.

Read These Provisions Closely

It is important to recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are less exact than other engineering and natural science disciplines. Without this understanding, there may be expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you need to know more how these "Data Report Limitations and Guidelines for Use" apply to your project or site.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

Have we delivered World Class Client Service?
Please let us know by visiting [www. geoengineers.com/feedback](http://www.geoengineers.com/feedback).

