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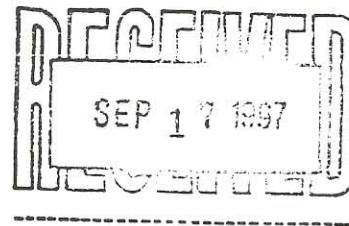
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September 12, 1997

GOTECH, Inc.  
8383 Bluebonnet Boulevard  
Baton Rouge, Louisiana 70810  
Attn: Mr. Bruce Dyson, P.E., P.L.S.



Ref: Coring and Sediment Analysis  
Lake Chapeau Hydrologic Restoration and Sediment Input Project  
C-K Associates' Project No. 34-707

Dear Mr. Dyson:

C-K Associates, Inc. (C-K Associates) has completed sediment coring and geotechnical analysis activities for the Lake Chapeau Hydrologic Restoration and Sediment Input Project in southwest Terrebonne Parish on Point au Fer Island in the vicinity of Lake Chapeau. The scope of work included collection and selected geotechnical analysis of sediment cores from the borrow area located in Atchafalaya Bay just offshore from Point au Fer and the Lake Chapeau project area. The scope of work is consistent with the Statement of Work received from GOTECH Inc. (GOTECH) via facsimile on July 22, 1997. This report serves to describe the core locations, coring activities, and sediment geotechnical analysis.

### Core Locations and Activities

C-K Associates collected six sediment cores via vibra-core methodology from the eight proposed locations included in the Statement of Work. The coring activities were performed over a one-day working period. The cores were collected from the following locations:

- ◆ four (4) cores from the four corners of the proposed alternate bid dredging site (78 acres) (Cores 1 to 4);
- ◆ one (1) core from the interior of the proposed alternate bid dredging site (Core 5);
- ◆ and one (1) core from the proposed permitted dredging site (1,000 acres) (Core 6).

The locations of these cores are shown on Figure 1. The locations of the cores was mapped with global positioning system (GPS) equipment and the coordinates of these cores are summarized in Table 1.

Mr. Bruce Dyson  
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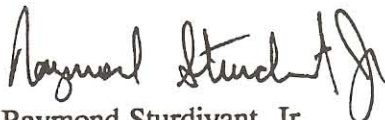
The total depth of the cores ranged from 6-feet 10.5-inches for Core 3 to 10-feet 11-inches for Core 5. Each core was terminated at the point of penetration refusal at each location. The depth of water at these locations ranged from 4 to 6 feet. The depth of water at each core location is noted on the soil boring logs included in Attachment A. The total depths of these cores are included in Table 1.

### Sediment Analysis

Each sediment core was analyzed for visual classification, grain size, water content, and Atterburg limits. The visual classification of the sediments was documented by a C-K Associates geologist on the soil boring logs of the six cores included in Attachment A. Each core consisted of soft gray clay with minor amounts of organics, rootlets, and shells. Three (3) samples per core were chosen from discrete intervals for the geotechnical analytical techniques. The sample intervals and results of the geotechnical tests are included on Table 2.

C-K Associates appreciates the opportunity to provide vibra-core and geotechnical analysis to GOTECH. If you have any questions regarding this correspondence, please do not hesitate to contact Rich Major or me at (504) 755-1000.

Very truly yours,  
C-K Associates, Inc.



Raymond Sturdivant, Jr.  
Project Hydrogeologist  
Groundwater and Remediation Services

ARM/RJS/mgb

Attachments: As stated

## **TABLES**

**TABLE 1**

**CORE LOCATIONS AND TOTAL DEPTHS**

**LAKE CHAPEAU HYDROLOGIC RESTORATION  
AND SEDIMENT INPUT PROJECT**

<b>Core</b>	<b>Coordinates</b>	<b>Total Depth</b>
1	N 3245523, E 667270	7' 6.5"
2	N 3245807, E 667140	9' 3.5"
3	N 3245779, E 666562	6' 10.5"
4	N 3245058, E 666402	9'
5	N 3245514, E 666716	10' 11"
6	N 3245849, E 664559	6' 8"



TABLE 2

GEOTECHNICAL ANALYSIS

LAKE CHAPEAU HYDROLOGIC RESTORATION  
AND SEDIMENT INPUT PROJECT

Core	Sample Depth (inches from top)	Moisture Content*		Liquid Limit	Plastic Limit	Plasticity Index	% Passing #200 Sieve	Soil Class
		% Dry Wt.	% Total Wt.					
1	12	139.3	58.2	89	41	48	99	OH
1	36	106.6	51.8	97	58	39	100	OH
1	72	113.3	53.1	121	41	80	100	OH
2	24	136.1	57.6	118	43	75	96	OH
2	60	127.4	52.3	121	32	89	98	OH
2	84	109.6	52.3	113	39	74	100	OH
3	24	153.6	60.6	114	33	81	100	OH
3	48	115.2	53.5	83	36	47	99	OH
3	72	137.8	57.9	92	42	50	100	OH
4	24	128.1	56.1	124	51	73	98	OH
4	48	142.0	58.7	111	44	67	96	OH
4	72	119.9	54.5	98	35	63	99	OH
5	24	131.1	56.7	123	52	71	99	OH
5	48	108.2	52.0	115	42	73	100	OH
5	84	126.1	55.8	113	45	68	98	OH
6	24	172.2	63.3	117	40	77	100	OH
6	60	132.4	57.0	114	38	76	99	OH
6	96	138.3	58.0	107	33	74	100	OH

Note: \* = Percent Dry Weight by ASTM Method D2216

**FIGURE**



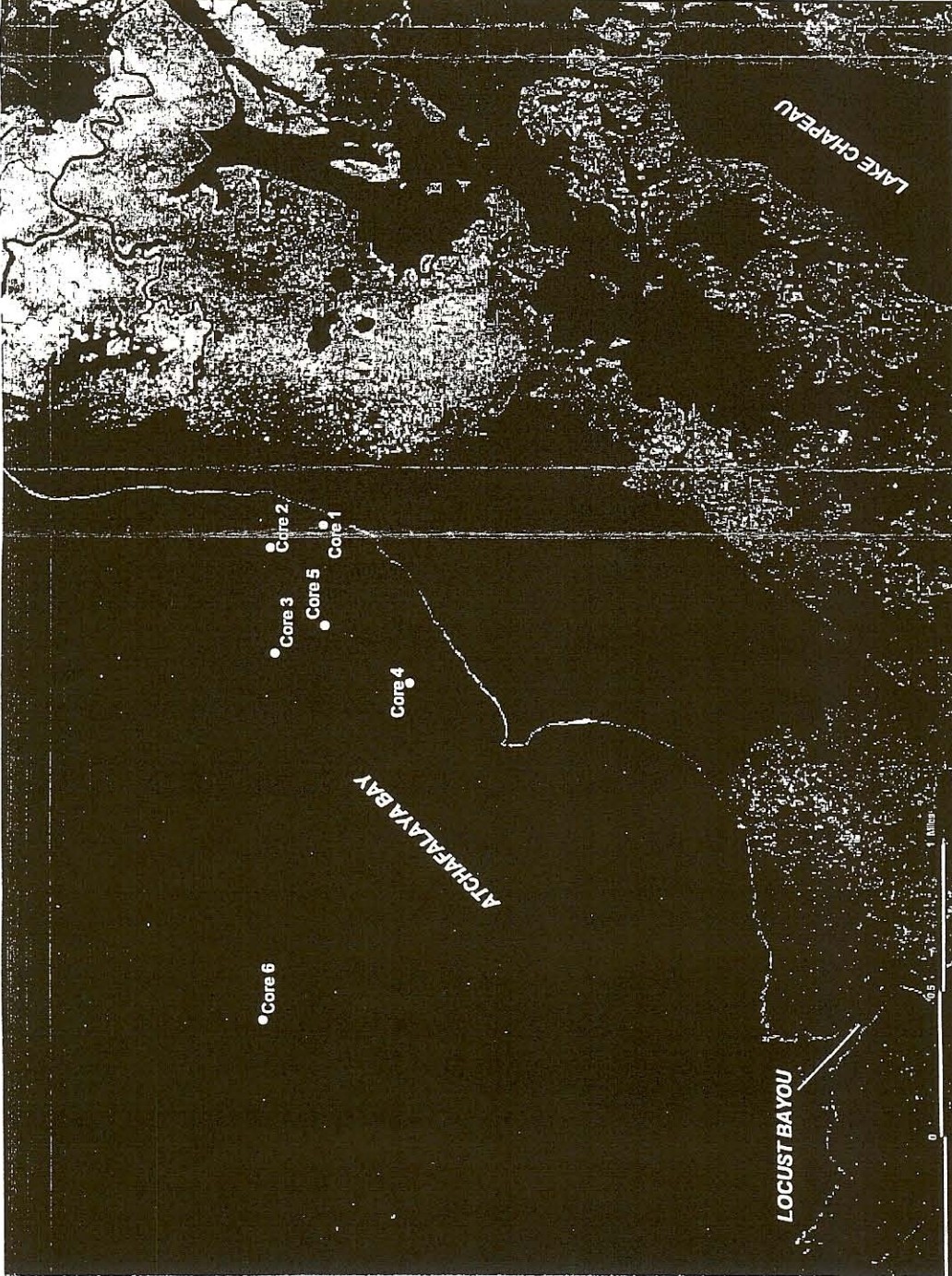


**LEGEND**

**CORE LOCATIONS**

Core	Northing	Easting
1	3245523	667270
2	3245607	667140
3	3245779	666562
4	3245058	666402
5	3245514	666716
6	3245849	664559

NOTE:  
 ALL COORDINATES STATED ARE UTM,  
 ZONE 15, NAD 27  
 BASE MAP TAKEN FROM 1985 AERIAL  
 PHOTOGRAPHY OBTAINED FROM U.S.G.S



**GOTTECH, INC.**  
 CONSULTING ENGINEERS  
 LAKE CHAPEAU RESTORATION PROJECT  
 CORE LOCATIONS MAP

TELEPHONE: 848-2100  
 DRAWN: JDE/RS  
 CHECKED: GJM  
 APPROVED: RS  
 DATE: 08/11/97  
 DRAWING NO.: 834-10-01

**CK**  
 A. S. S. O. C. I. A. T. E. S., I. N. C.  
 BATON ROUGE, LOUISIANA

FIGURE 1

**ATTACHMENT A**  
**SOIL BORING LOGS**



# C-K ASSOCIATES, INC.

## SOIL BORING LOG: CORE-1

CLIENT: GOTECH, Inc.	LOCATION: Point au Fer, Louisiana	PROJECT NO.: 34-707
DRILLER: C-K Associates, Inc.	PROJECT NAME: Lake Chapeau Restoration	X COORD.: E 667,270
DATE DRILLED: 09/09/97	DRILLING METHOD: Vibra Core	Y COORD.: N 3,245,523
TOTAL DEPTH: 7'6.5"	WATER LEVEL (I): NA	WATER LEVEL (S): NA
LOGGED BY: Ray Sturdivant	SURFACE ELEVATION: NA	TOC ELEVATION: NA

Depth (ft bgs)	Core Sample	O V A (ppm)	Description	USCS	Lith.	Well Design	Remarks
0	1		Soft, gray CLAY ---2" thick organic seam at 5"	OH			
2	2		---with rootlets at 2' 3"				
4	3		---no rootlets at 4'				
6	4		---1/2" thick organic seam at 6' 10"				
8	5		Boring terminated at 7' 6.5" (90.5")  Boring location had water depth of 6 feet				

**NOTES:**

Approved:



Initial Water Level  
Static Water Level



Hand  
Grab



Shelby  
Tube



Split  
Spoon



No  
Recovery

# C-K ASSOCIATES, INC.

## SOIL BORING LOG: CORE-2

CLIENT: GOTECH, Inc.	LOCATION: Point au Fer, Louisiana	PROJECT NO.: 34-707
DRILLER: C-K Associates, Inc.	PROJECT NAME: Lake Chapeau Restoration	X COORD.: E 867,140
DATE DRILLED: 09/08/97	DRILLING METHOD: Vibra Core	Y COORD.: N 3,245,807
TOTAL DEPTH: 9'3.5"	WATER LEVEL (I): NA	WATER LEVEL (S): NA
LOGGED BY: Ray Sturdivant	SURFACE ELEVATION: NA	TOC ELEVATION: NA

Depth (ft bgs)	Core Sample	O V A (ppm)	Description	USCS	Lith.	Well Design	Remarks
0			Soft, gray CLAY with rootlets, bivalves	OH			
2			---no bivalves at 6"				
4							
6			---no rootlets at 6.5'				
8							
10			Boring terminated at 9' 3.5" (111.5")				

**NOTES:**

Approved: *RS*



Initial Water Level



Static Water Level



Hand  
Grab



Shelby  
Tube



Split  
Spoon



No  
Recovery

# C-K ASSOCIATES, INC.

## SOIL BORING LOG: CORE-3

CLIENT: GOTECH, Inc.	LOCATION: Point au Fer, Louisiana	PROJECT NO.: 34-707
DRILLER: C-K Associates, Inc.	PROJECT NAME: Lake Chapeau Restoration	X COORD.: E 868,582
DATE DRILLED: 09/09/97	DRILLING METHOD: Vibra Core	Y COORD.: N 3,245,779
TOTAL DEPTH: 6'10.5"	WATER LEVEL (I): NA	WATER LEVEL (S): NA
LOGGED BY: Ray Sturdivant	SURFACE ELEVATION: NA	TOC ELEVATION: NA

Depth (ft bgs)	Core Sample	O V A (ppm)	Description	USCS	Lith.	Well Design	Remarks
0	1		Soft, gray CLAY with larger bivalves	OH			
2	2		---no bivalves at 10", with rootlets and bivalves				
4	3						
6	4		---1/4" thick organic seam at 67"				
8	5		Boring terminated at 6'10.5" (82")				
			Boring location had water depth of 4 feet				

**NOTES:**

Approved: RS



Initial Water Level



Static Water Level



Hand Grab



Shelby Tube



Split Spoon



No Recovery



# C-K ASSOCIATES, INC.

## SOIL BORING LOG: CORE-4

CLIENT: GOTECH, Inc.	LOCATION: Point au Fer, Louisiana	PROJECT NO.: 34-707
DRILLER: C-K Associates, Inc.	PROJECT NAME: Lake Chapeau Restoration	X COORD.: E 866,402
DATE DRILLED: 09/09/97	DRILLING METHOD: Vibra Core	Y COORD.: N 3,245,058
TOTAL DEPTH: 9.0'	WATER LEVEL (I): NA	WATER LEVEL (S): NA
LOGGED BY: Ray Sturdivant	SURFACE ELEVATION: NA	TOC ELEVATION: NA

Depth (ft bgs)	Core Sample	O V A (ppm)	Description	USCS	Lith.	Well Design	Remarks
0			Soft, gray CLAY with some rootlets	OH			
2							
4			---1/2" thick organic seam at 33"				
6			---less rootlets at 5'				
8							
10			Boring terminated at 9' (118")				Boring location had water depth of 8 feet

**NOTES:**

Approved: *RS*



Initial Water Level



Static Water Level



Hand Grab



Shelby Tube



Split Spoon



No Recovery



# C-K ASSOCIATES, INC.

## SOIL BORING LOG: CORE-5

CLIENT: GOTECH, Inc.	LOCATION: Point au Fer, Louisiana	PROJECT NO.: 34-707
DRILLER: C-K Associates, Inc.	PROJECT NAME: Lake Chapeau Restoration	X COORD.: E 686,716
DATE DRILLED: 09/09/97	DRILLING METHOD: Vibra Core	Y COORD.: N 3,245,514
TOTAL DEPTH: 10'11"	WATER LEVEL (I): NA	WATER LEVEL (S): NA
LOGGED BY: Ray Sturdivant	SURFACE ELEVATION: NA	TOC ELEVATION: NA

Depth (ft bgs)	Core Sample	O V A (ppm)	Description	USCS	Lith.	Well Design	Remarks
0			Soft, gray CLAY with rootlets and bivalves	OH			
2			---no bivalves at 6"				
4							
6							
8			---no rootlets at 7'				
10							
12			Boring terminated at 10'11" (131")				
			Boring location had water depth of 5 feet				

**NOTES:**

Approved: *RS*



Initial Water Level



Static Water Level



Hand  
Grab



Shelby  
Tube



Split  
Spoon



No  
Recovery

# C-K ASSOCIATES, INC.

## SOIL BORING LOG: CORE-6

CLIENT: GOTECH, Inc.	LOCATION: Point au Fer, Louisiana	PROJECT NO.: 34-707
DRILLER: C-K Associates, Inc.	PROJECT NAME: Lake Chapeau Restoration	X COORD.: E 864,559
DATE DRILLED: 09/09/97	DRILLING METHOD: Vibra Core	Y COORD.: N 3,245,849
TOTAL DEPTH: 6'8"	WATER LEVEL (I): NA	WATER LEVEL (S): NA
LOGGED BY: Ray Sturdivant	SURFACE ELEVATION: NA	TOC ELEVATION: NA

Depth (ft bgs)	Core Sample	O V A (ppm)	Description	USCS	Lith.	Well Design	Remarks
0	1		Soft, gray CLAY	OH			
2			---1/2" thick layer of small shell fragments at 16"				
4			---1" thick layer of large shells at 32"				
6							
8			Boring terminated at 6'8" (90")				
			Boring location had water depth of 4 feet				

**NOTES:**

Approved: *RS*



Initial Water Level



Static Water Level



Hand  
Grab



Shelby  
Tube



Split  
Spoon



No  
Recovery