RACCOON ISLAND SHORELINE PROTECTION/ MARSH CREATION (TE-48) PROJECT TERREBONNE PARISH, LOUISIANA

SURVEY REPORT

PREPARED FOR:

CPRA
Coastal Protection and Restoration Authority of Louisiana

MAY 5, 2015

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

SUBMITTED BY:

T. BAKER SMITH, LLC
SOLUTIONS START HERE

RACCOON ISLAND SHORELINE PROTECTION/ MARSH CREATION (TE-48) PROJECT
SURVEY REPORT

Prepared for: C.P.R.A.
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RACCOON ISLAND
SHORELINE PROTECTON/ MARSH CREATION
PROJECT NO. TE-48

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RACCOON ISLAND SHORELINE PROTECTION/ MARSH CREATION (TE-48) PROJECT
TERREBONNE PARISH, LOUISIANA

1.0 INTRODUCTION

The purpose of the data collection tasks summarized in this report is to provide critical support information for monitoring orthometric heights, which are used to determine project success and ecosystem sustainability for the Raccoon Island Shoreline Protection/Marsh Creation (TE-48) Project. This task order is sponsored by the Operations Division of the Louisiana Coastal Protection and Restoration Authority (CPRA). The work performed by T. Baker Smith, LLC (TBS) and described in this report was outlined in *Scope of Services for Topographic and Bathymetric Surveys* for *Raccoon Island Shoreline Protection/Marsh Creation (TE-48) Project, Terrebonne Parish, Louisiana* dated November 1, 2014.

2.0 PROJECT OVERVIEW

Raccoon Island is the western most island of a twenty mile chain of islands named Isle Dernieres, which is located approximately 50 miles south of Houma, Louisiana. 17 rock structures (16 breakwaters and 1 groin) are currently present on the southeast portion of Raccoon Island. 8 of the breakwaters were constructed in 1997 for the Raccoon Island Breakwaters Demonstration (TE-29) Project, and the remaining 8 breakwaters and the east groin were constructed in 2007 for the Raccoon Island Shoreline Protection/Marsh Creation (TE-48) Project.

The primary objective of this project is to analyze geomorphic alterations in Raccoon Island caused by erosion and longshore sediment transportation. This analysis is performed by resurveying previously established and observed cross sectional transects. The locations and coordinates of the specific survey transects can be seen in Drawing Package 1.

3.0 DATA COLLECTION SUMMARY

Field data was collected by TBS utilizing a three-man survey crew during the period of February 6, 2015 through February 26, 2015. A 24' survey vessel with dual outboards was used for marine transportation. The field crew launched the boat at Jug's Marina located in Theriot, Louisiana on Bayou Dularge approximately 20 miles south of the TBS corporate office in Houma, Louisiana. The field crew performed the necessary GPS static surveys to establish the horizontal and vertical control on the monument "TE48-SM-01" (COON). The crew completed a topographic survey of the 17 rock structures and marsh creation platform and also established elevations for the 36 settlement plates located in the breakwaters and groin.

3.1 GPS STATIC SURVEY

A GPS static survey was completed for the existing survey monument "TE48-SM-01" (COON). This survey was done to update the survey data for the monument "TE48-SM-01". These surveys were performed on February 10 - 12, 2015 by collecting static GPS (GNSS) data during three (3) five-hour sessions.

3.2 MARSH CREATION PLATFORM TRANSECTS

Topographic surveys were performed along 10 transects located on the marsh creation platform. The transects run perpendicular to the island at approximately 500 foot intervals.

3.3 ROCK STRUCTURES TRANSECTS AND PROFILES

Topographic surveys were performed along 60 transects and 17 profiles over the breakwaters and groin rock structures. Each breakwater has 3 transects which run perpendicular to the structure and 1 profile along the length of the structure. The breakwaters are typically 300' in length. The 3 transects for each breakwater were spaced evenly at approximately 120' – 140' and are categorized by a west section, a mid section, and an east section. The groin contains 12 transects which run perpendicular to the structure and 1 profile along the length of the structure. The transects are spaced

approximately 100' apart. Stationing and transect placement for the east groin were taken from the Raccoon Island Shore Protection/ Marsh Creation Project Phase A (TE-48) "As-Built" Drawings dated 06/05.

An overall survey layout plan view showing the breakwater transect locations and a coordinate table can be seen in Drawing Package 1 (pages 1 - 2).

3.4 SETTLEMENT PLATES ELEVATIONS

Elevations were established at each of the 36 settlement plates installed in the rock breakwaters and groin. GPS shots of a duration of 10 seconds were taken to insure accuracy. A table showing the elevations of the settlement plates can be seen in Drawing Package 1 (page 2).

4.0 METHODOLOGY

4.1 SURVEY CONTROL AND DATUM INFORMATION

The horizontal datum for all survey data collected is Louisiana State Plane, South Zone (1702), NAD 83, in U.S. Survey feet. The vertical datum for all data collected is NAVD 88, Geoid 12A in U.S. Survey feet. The secondary GPS network monument "TE48-SM-01" (COON) was used as control for the survey.

4.2 STATIC GPS NETWORK PLANNING

The Static GPS Network was designed to incorporate four (4) CORS "Continuously Operating Reference Station" from the Center for GeoInformatics at LSU. The four CORS used for this survey were "DEV1", "FSHS", "GRIS", and "HOUM". They are located in Eugene Island 337, Franklin, Grand Isle, and Houma respectively. Since these stations are continuously collecting data, simultaneous data was collected for all four CORS during the time of the static survey of the monument. This schedule allowed the Static GPS Survey to be completed over a period of three days, which included redundant observations for each baseline. The GPS Session Schedule can be seen in Appendix 3. A map of the project area can be seen in Appendix 2.

4.3 GPS STATIC SURVEY

The GPS Static Survey was performed using a Trimble© R8 Model 3 GNSS receiver equipped with a Geodetic Antenna and fixed height tripod. The GPS receiver was set to collect L1 and L2 data at a 15 second epoch rate with a 10 degree elevation mask. Static GPS data was collected at the benchmark for a minimum of 5 hours per session. A total of three data collection sessions were performed on different days and at different times of the day. Field personnel documented each data collection setup on GPS field log sheets. These log sheets contain the date, start time, stop time, station name, GPS receiver serial number, weather conditions, etc. A copy of the field log sheets can be seen in Appendix 4.

4.4 DATA PROCESSING AND NETWORK ADJUSTMENT

The static GPS data was downloaded from the receiver and imported into Trimble© Business Center (TBC) for processing and QA/QC. Each setup was checked to verify that the antenna height and station name matched the corresponding field log sheet. GPS data files were also sent to OPUS to determine approximate position. These OPUS positions were checked against the log sheet to determine any setup errors.

The final (precise) ephemeris for the static GPS data was downloaded 18 days after the last field session was completed. The precise ephemeris data was then imported into TBC for final baseline processing and adjustment. Each baseline was processed using a 15 degree elevation mask and all baselines achieved a fixed solution with no editing. Next, a 3-D minimally constrained least squares (free) adjustment was performed holding monument "HOUM" fixed in latitude, longitude, and ellipsoid height. This adjustment used GEOID12A as the basis for determining orthometric heights of adjusted ellipsoid heights. The network was found to fit existing control within acceptable limits, and all primary control was found to be consistent with respect to differences in published and computed elevation values. The Initial and Weighted Free Adjustment Report can be seen in Appendix 6. Once the Free Adjustment passed the Chi Square Test, a fully constrained least squares adjustment was performed holding all

CORS fixed in latitude, longitude, and ellipsoid height. The Fully Constrained Network Adjustment report and final adjusted positions can be seen in Appendix 7. A summary of the residuals of adjusted positions versus OPUS positions can be seen in Appendix 5.

4.5 TOPOGRAPHIC SURVEYS

A Trimble© model R8 GNSS GPS RTK unit was used to collect the topographic field data. The manufacturer's stated accuracy of this unit is 2-3 cm horizontal, and 3-4 cm vertical. All RTK GPS Survey information was stored digitally using a Trimble TSC-3 Data Collector.

Topographic survey data was downloaded from the Trimble TSC-3 Data Collector into the Trimble Business Center software for processing. This software allows for QA/QC of GPS data, and was used to check for instrument setup errors, antenna height errors, and other discrepancies. This data was exported to digital point files and then entered into AutoCAD Civil 3D for further processing.

Manual soundings were taken with a level rod where collection of topography points using the RTK GPS were not obtainable due to high water depths or unsafe conditions. Easting, Northing and elevations (X, Y and Z) of the sounding points were calculated using a Microsoft Excel spreadsheet program. Beginning and ending point numbers for the sounding transects, stationing and top of water elevations were recorded in the field notes. The top of water elevations were taken using RTK GPS.

5.0 CHRONOLOGICAL SUMMARY OF WORK

Below is a table detailing the order in which the field data was collected. Because the project area is located within the Louisiana Department of Wildlife and Fisheries (LDWF) administered Isle Dernieres Barrier Islands Refuge, great effort was made to finish all of the field tasks by the end of February in order to avoid the 2015 waterbird nesting season which occurs approximately from March until July. Due to the location of this project on a barrier island in the Gulf of Mexico, accessibility to the site was highly weather dependent.

Survey Timeline			
DATE	SURVEY TYPE	PARTY CHIEF	DESCRIPTION
02/06/2015	Topo	Jeremy Stevens	Marsh Creation
02/10/2015	Static/ Topo	Jeremy Stevens	Static & Marsh Creation
02/11/2015	Static/ Topo	Jeremy Stevens	Static & Breakwater
02/12/2015	Static/ Topo	Jeremy Stevens	Static & Breakwater
02/13/2015	Static/ Topo	Jeremy Stevens	Static & Breakwater
02/19/2015	Topo	Jeremy Stevens	Breakwater
02/26/2015	Topo	Jeremy Stevens	Breakwater

APPENDIX 1

New Survey Benchmark Data Sheet:

TE48-SM-01

VICINITY MAP **Scale: 1" = 2,000'** Reproduced from 2013 GOOGLE Earth Aerial Image

Station Name: "TE48-SM-01"

Monument Location: Located in Terrebonne Parish, Louisiana, on the north side of Raccoon Island in Isles Dernieres, and is approximately 24 miles southwesterly of Cocodrie, Louisiana.

Monument Description: NGS style floating sleeve monument; datum point set on 9/16" stainless steel sectional rods driven 88 feet to refusal, set in sand filled 6" PVC pipe with access cover set flush with the ground.

Stamping: "COON"

Installation Date: January 2005

Monument Established By: John Chance Land Surveys, Inc.

For: *La. Dept. of Natural Resources, CRD*

Date of Survey Update: March 10-12, 2015

Monument Updated By: T. Baker Smith, LLC

Adjusted NAD 83 (2011-Epoch 2010) Geodetic Position
Lat. 29° 03' 14.79114" N
Long. 90° 55' 59.37394" W

Adjusted NAD 83 Datum LSZ (1702) Feet
N= 201,740.531
E= 3,408,702.132

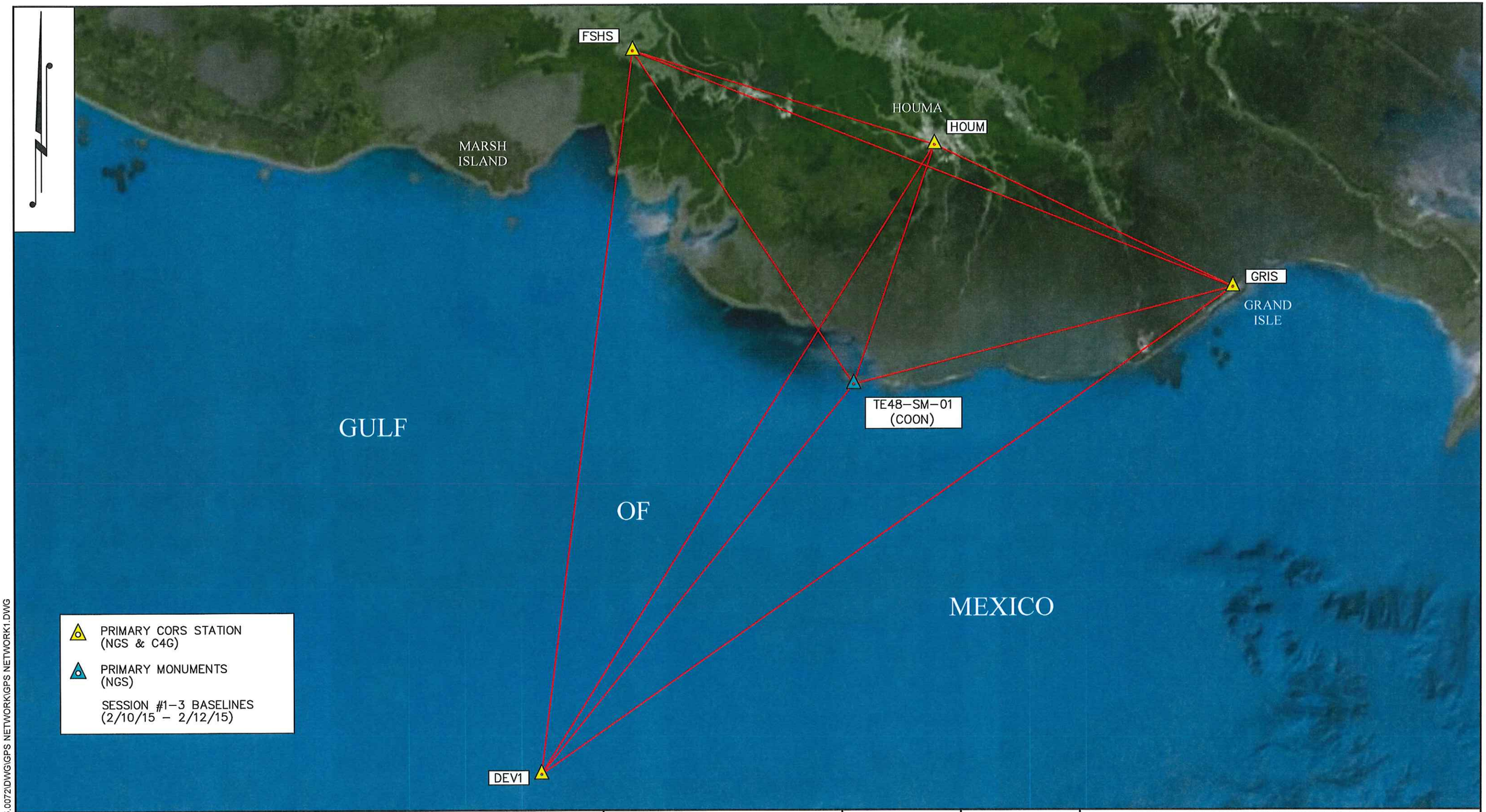
Adjusted NAVD88 (2011-Epoch 2010.0) Height
Elevation = 1.488 feet (0.454 mtrs.) (Geoid12A)

Ellipsoid Height = -23.624 mtrs.
Geoid12A Height = -24.078 mtrs.

Adjusted position determined by T. Baker Smith, LLC for Coastal Protection and Restoration Authority

APPENDIX 2

GPS Network Map



3/19/2015 - P:\Y-2015\2015.0072\DWG\GPS NETWORK\GPS NETWORK1.DWG

Coastal Protection and Restoration Authority of Louisiana

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(985)868-1050 - tbsmith.com

SCALE: 1" = 14 MILES
14 MILES 7 MILES 0' 14 MILES

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

DRAWN BY:	A.W.S.	APPROVED BY:	J.C.M.
DATE:	3/17/2015	JOB NO:	2015.0072
DRAWING NAME:	GPS NETWORK1.DWG		

PROJECTION: LA 83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 Gd 12A
GRID UNITS: US SURVEY FEET

SHEET NO: 1 OF 1

GPS NETWORK

TE48 RACCOON ISLAND SHORELINE PROTECTION/MARSH CREATION

TE48-SM-01 MONUMENT INSTALLATION
C.P.R.A.
COASTAL PROTECTION AND RESTORATION
TERREBONNE PARISH, LOUISIANA

APPENDIX 3

Session Schedule

C.P.R.A. - Coastal Protection and Restoration Authority

"TE48-SM-01" (Coon) Monument Resurvey
For
TE-48 Raccon Island Shoreline Protection/Marsh Creation

T. BAKER SMITH

GPS SESSION SCHEDULE

Date	Monument	Operator / Crew	Session #	Start Time	End Time	Length
2/10/2015	TE48-SM-01	Jeremy Stevens	1	9:06	2:12	5:06
2/11/2015	TE48-SM-01	Jeremy Stevens	2	7:56	3:20	7:24
2/12/2015	TE48-SM-01	Jeremy Stevens	3	8:29	1:40	5:11

APPENDIX 4

GPS Field Log Sheets

USE THIS FORM IF USING FIXED HEIGHT TRIPODS TO DOCUMENT STATIC SURVEYS ON BASE POINTS FOR ALL RTK SURVEYS

GPS LOG SHEET

Job No.	2015.0072	Date	2-10-15	Observer	J. STEVENS
Client	TETRA-TECH	Job Description	BREAKWATER SURVEY		
Location	RACCOON ISLAND	Proj. Mgr.	J. MATTINGLY		

SESSION INFO

	4 Characters		3 Characters		1 Character
File Name	1301	Julian Date	041	Session No.	1

Long Name	TE48-SM-01 (COON)		
Mon. Description	9/16" SS ROD IN SAND-FILLED 6" PVC		
Rec. Base Type	R8 GNSS	Rec Serial #	5203481301
Base Ant Type		Base Ant Ser #	
Rover Ant Type	R8 GNSS	Rover Ant Ser #	5130469159

Antenna Height Measurement is **TRUE VERTICAL** to the Bottom of Antenna Mount if Using Fixed Hgt Tripod

Fixed Hgt 2 Meter Tripod	2.25 m	Mtrs or Ft
Tripod Number	1	

Actual Start Time	0907	Actual Stop Time	1413	Session Time (Min 2:01 Hr)	5:06

BASE STATION INFORMATION

	WGS84, NAD83 or NAD27		***Example**: LA South Zone or TX South Central Zone*
DATUM	NAD 83	ZONE	LA SOUTH 1702
Northing/Lat	201740.571	**Coordinate Origin**-*Where did you get your positions?*	
Easting/Long.	3408702.089	DATA SHEET	
Elevation	2.459		

Note any power problems, obstructions, weather issues, etc.

ALL WHITE BOXES MUST BE FILLED IN WITH INFORMATION. A MINIMUM OBSERVATION OF 2 HOURS IS REQUIRED TO DETERMINE THE 3-D POSITION OF AN UNKNOWN POINT USING NGS-OPUS

USE BACK OF THIS SHEET TO MAKE STATION SKETCH, REFERENCE TIES & DESCRIPTION

USE THIS FORM IF USING FIXED HEIGHT TRIPODS TO DOCUMENT STATIC SURVEYS ON BASE POINTS FOR ALL RTK SURVEYS

GPS LOG SHEET

Job No.	2015.0072	Date	2-11-15	Observer	J. Stevens
Client	TETRA-TECH	Job Description	BREAKWATER SURVEY		
Location	RACCOON ISLAND			Proj. Mgr.	J. MATTINGLY

SESSION INFO

File Name (4 Characters)	1301	Julian Date (3 Characters)	042	Session No. (1 Character)	0
Long Name	TG48-SM-01 (COON)				
Mon. Description	9/16" SS ROD IN SAND-FILLED 6" PVC				
Rec. Base Type	R8 GNSS	Rec Serial #	520348 1301		
Base Ant Type		Base Ant Ser #			
Rover Ant Type	R8 GNSS	Rover Ant Ser #	513046 9159		

Antenna Height Measurement is **TRUE VERTICAL** to the Bottom of Antenna Mount if Using Fixed Hgt Tripod

Fixed Hgt 2 Meter Tripod	2.25 m	Mtrs or Ft
Tripod Number	1	

Actual Start Time	0756	Actual Stop Time	1520	Session Time (Min 2:01 Hr)	7:24

BASE STATION INFORMATION

	WGS84, NAD83 or NAD27		***Example**: LA South Zone or TX South Central Zone*
DATUM	NAD 83	ZONE	LA SOUTH 1702
Northing/Lat	201740.571	**Coordinate Origin**-*Where did you get your positions?*	
Easting/Long.	3408702.089	DATA SHEET	
Elevation	2.459		

Note any power problems, obstructions, weather issues, etc.

ALL WHITE BOXES MUST BE FILLED IN WITH INFORMATION. A MINIMUM OBSERVATION OF 2 HOURS IS REQUIRED TO DETERMINE THE 3-D POSITION OF AN UNKNOWN POINT USING NGS-OPUS

USE BACK OF THIS SHEET TO MAKE STATION SKETCH, REFERENCE TIES & DESCRIPTION

USE THIS FORM IF USING FIXED HEIGHT TRIPODS TO DOCUMENT STATIC SURVEYS ON BASE POINTS FOR ALL RTK SURVEYS

GPS LOG SHEET

Job No.	2015.0072	Date	2-12-15	Observer	J. STEVENS
Client	TETRA-TECH	Job Description	BREAKWATER SURVEY		
Location	RACCOON ISLAND			Proj. Mgr.	J. MATTINGLY

SESSION INFO

File Name (4 Characters)	1301	Julian Date (3 Characters)	043	Session No. (1 Character)	0
Long Name	TE48-SM-01 (COON)				
Mon. Description	9/16" SS ROD IN SAND-FILLED 6" PVC				
Rec. Base Type	R8 GNSS	Rec Serial #	5203481301		
Base Ant Type		Base Ant Ser #			
Rover Ant Type	R8 GNSS	Rover Ant Ser #	513046 9159		

Antenna Height Measurement is **TRUE VERTICAL** to the Bottom of Antenna Mount if Using Fixed Hgt Tripod

Fixed Hgt 2 Meter Tripod	2.25 m	Mtrs or Ft
Tripod Number	1	

Actual Start Time	0829	Actual Stop Time	1340	Session Time (Min 2:01 Hr)	5:12

BASE STATION INFORMATION

	WGS84, NAD83 or NAD27		***Example**: LA South Zone or TX South Central Zone*
DATUM	NAD 83	ZONE	LA SOUTH 1702
Northing/Lat	201740.571	**Coordinate Origin**-*Where did you get your positions?*	
Easting/Long.	3408702.089	DATA SHEET	
Elevation	2.459		

Note any power problems, obstructions, weather issues, etc.

ALL WHITE BOXES MUST BE FILLED IN WITH INFORMATION. A MINIMUM OBSERVATION OF 2 HOURS IS REQUIRED TO DETERMINE THE 3-D POSITION OF AN UNKNOWN POINT USING NGS-OPUS

USE BACK OF THIS SHEET TO MAKE STATION SKETCH, REFERENCE TIES & DESCRIPTION

GPS STATION OBSERVATION SHEET

SHEET___of

PROJECT: 2015.0072
STATION NAME: TE48-SM-01 (COON)
STATION ID: TE48-SM-01 (COON)
DATE FOUND/SET:_____
STATION DESCRIPTION: 9/16" SS ROD IN SAND-FILLED 6" PVC

STATION STAMPING: COON

STATION ACCESS:

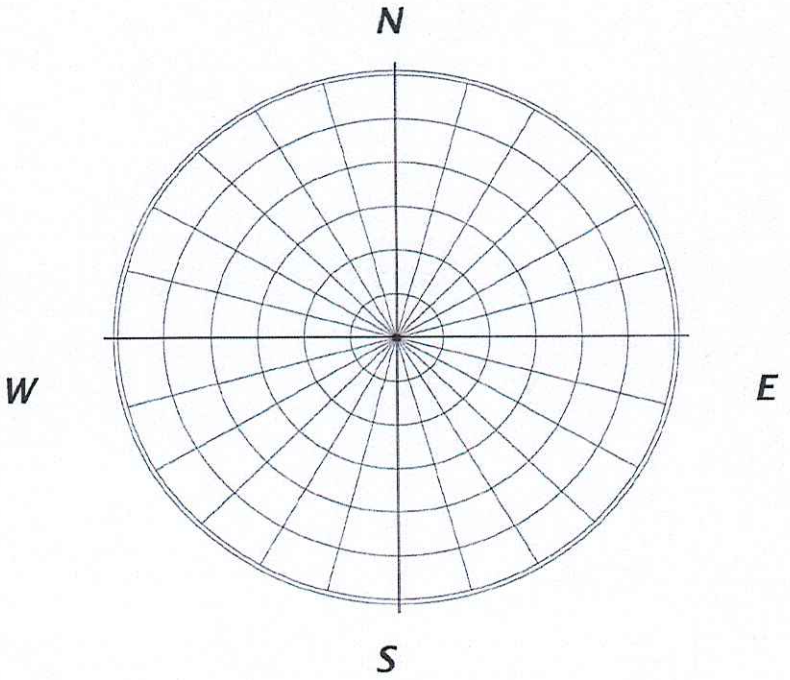
ACCESS SKETCH

OBSERVER: J. STEVENS
RECEIVER TYPE: R8 GNSS ANTENNA TYPE:_____
SESSION #: 13010411 **FILE NAME:** 13010411.T02
LOCAL DATE: 2-10-15 START: 0907 END: 1413
UTC DATE:_____ JULIAN DAY: 041
UTC START:_____ UTC END:_____

ANTENNA DETAILS:

MEASUREMENT TYPE (TRUE/UNCORRECTED): 2.25m
START (1st)_____(2nd)_____(3rd)_____(AVG)_____
STOP (1st)_____(2nd)_____(3rd)_____(AVG)_____

OBSTRUCTION CHART



LAT:_____LONG:_____ HEIGHT:_____

GPS STATION OBSERVATION SHEET

SHEET___of

PROJECT: 2015.0072
STATION NAME: TE48-5m-01 (COON)
STATION ID: TE48-5m-01 (COON)
DATE FOUND/SET:_____
STATION DESCRIPTION: 9/16" SS ROD IN SAND-FILLED 6" PVC

STATION STAMPING: COON

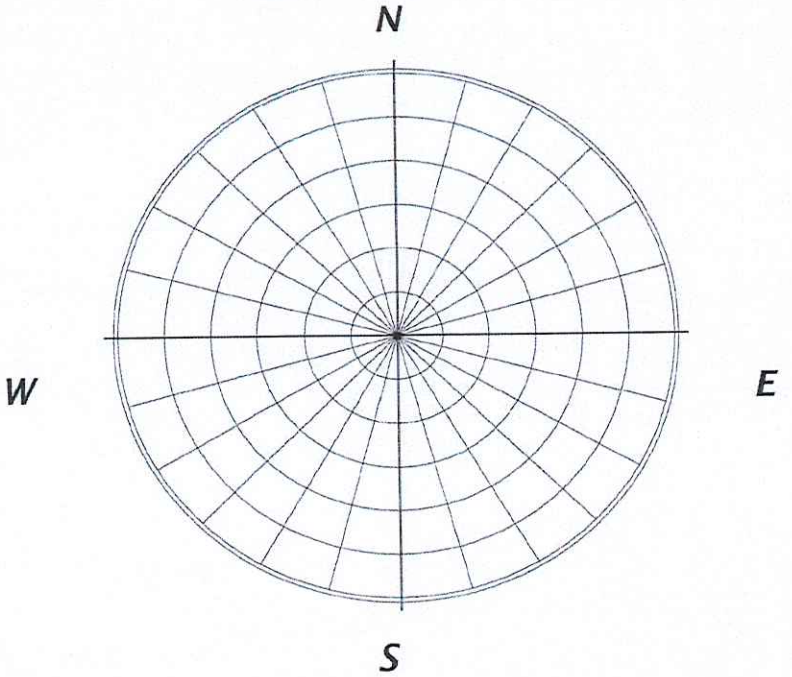
STATION ACCESS:

ACCESS SKETCH

OBSERVER: J. STEVENS
RECEIVER TYPE: R8 GNSS ANTENNA TYPE:_____
SESSION #: 13010420 **FILE NAME:** 13010420.T02
LOCAL DATE: 2-11-15 START: 0756 END: 1520
UTC DATE:_____ JULIAN DAY: 042
UTC START:_____ UTC END:_____

ANTENNA DETAILS:
MEASUREMENT TYPE (TRUE/UNCORRECTED): 2.25m
START (1st)_____(2nd)_____(3rd)_____(AVG)_____
STOP (1st)_____(2nd)_____(3rd)_____(AVG)_____

OBSTRUCTION CHART



LAT:_____LONG:_____ HEIGHT:_____

GPS STATION OBSERVATION SHEET

SHEET___of

PROJECT: 2015.0072
STATION NAME: TE48-SM-01 (COON)
STATION ID: TE48-SM-01 (COON)

DATE FOUND/SET:_____

STATION DESCRIPTION: 9/16" SS ROD IN SAND-FILLED 6" PVC

STATION STAMPING: COON

STATION ACCESS:_____

ACCESS SKETCH

OBSERVER: J. STEVENS
RECEIVER TYPE: R8 GNSS ANTENNA TYPE:_____

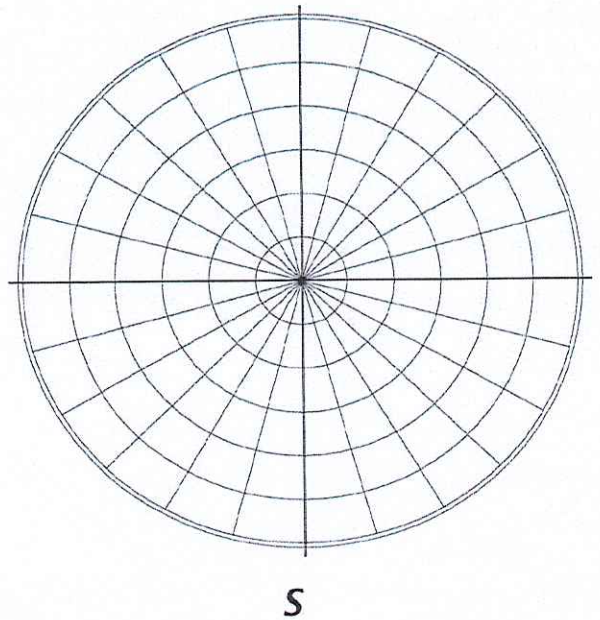
SESSION #: 13010430 **FILE NAME:** 13010430.T02
LOCAL DATE: 2-12-15 START: 0829 END: 1340

UTC DATE:_____ JULIAN DAY: 043
UTC START:_____ UTC END:_____

ANTENNA DETAILS:

MEASUREMENT TYPE (TRUE/UNCORRECTED): 2.25 m
START (1st)_____(2nd)_____(3rd)_____(AVG)_____
STOP (1st)_____(2nd)_____(3rd)_____(AVG)_____

OBSTRUCTION CHART



LAT:_____LONG:_____ HEIGHT:_____

APPENDIX 5

Network Adjustment and OPUS Summary

C.P.R.A. - Coastal Protection and Restoration Authority

Elevation Survey Update of "TE48-SM-01"
For
TE-48 Raccoon Island Shoreline Protection/Marsh Creation

T. BAKER SMITH

MINIMALLY CONSTRAINED NETWORK ADJUSTMENT SUMMARY

	TBC Adjusted Values			Published Control Values			Residuals		
Station	Northing (ft)	Easting (ft)	Ht. (ft)	Northing (ft)	Easting (ft)	Ht. (ft)	Δ Northing (ft)	Δ Easting (ft)	Δ Ht. (ft)
DEV1	-117001.382	3152130.399	112.969	-117001.388	3152130.360	112.994	0.023	0.023	0.024
FSHS	474730.211	3227265.780	37.464	474730.254	3227265.765	37.424	0.023	0.023	0.025
GRIS	281033.491	3719590.181	27.348	281033.474	3719590.183	27.375	0.023	0.023	0.024
HOUM	Fixed	Fixed	Fixed	397729.333	3474618.955	45.350	Fixed	Fixed	Fixed
TE48-SM-01(COON)	201740.531	3408702.147	1.477	-	-	-	0.023	0.023	0.025

FULLY CONSTRAINED NETWORK ADJUSTMENT SUMMARY

	TBC Adjusted Values			Published Control Values			Precision (95% Confidence Level)		
Station	Northing (ft)	Easting (ft)	El. (ft)*	Northing (ft)	Easting (ft)	Ht. (ft)	Northing (ft)	Easting (ft)	El. (ft)*
DEV1	Fixed	Fixed	Fixed	-117001.388	3152130.36	112.994	Fixed	Fixed	Fixed
FSHS	Fixed	Fixed	Fixed	474730.254	3227265.765	37.424	Fixed	Fixed	Fixed
GRIS	Fixed	Fixed	Fixed	281033.474	3719590.183	27.375	Fixed	Fixed	Fixed
HOUM	Fixed	Fixed	Fixed	397729.333	3474618.955	45.350	Fixed	Fixed	Fixed
TE48-SM-01(COON)	201740.531	3408702.132	1.488	-	-	-	0.018	0.018	0.021

OPUS ELEVATION SUMMARY

	Final OPUS Values				TBC Adjusted	
Station	Elevation (m)	Elevation (ft)	RMS	Notes	Elevation (ft)	Δ Elev (ft)*
TE112-SM-01	0.429	1.407	0.013		1.488	0.081
	0.449	1.473	0.015		1.488	0.015
	0.427	1.401	0.012		1.488	0.087
Average	**0.435**	**1.427**				**0.046**

* - Elevations expressed in NAVD88 computed using GEOID 12A

APPENDIX 6

Initial and Weighted Free Network Adjustment Report

T Baker Smith, LLC	www.tbsmith.com

Project File Data		Coordinate System	
Name:	P:\Y-2015\2015.0072\FieldData\TBC_Files\2015.0072_cp.vce	Name:	US State Plane 1983
Size:	1 MB	Datum:	NAD 1983 (Conus)
Modified:	3/18/2015 4:01:22 PM (UTC:-5)	Zone:	Louisiana South 1702
Time zone:	Central Standard Time	Geoid:	GEOID12A (Conus)
Reference number:		Vertical datum:	NAVD88 (2011)
Description:			

Network Adjustment Report

Adjustment Settings

Set-Up Errors

GNSS

Error in Height of Antenna: 0.003 ft

Centering Error: 0.010 ft

Covariance Display

Horizontal:

Propagated Linear Error [E]: U.S.

Constant Term [C]: 0.000 ft

Scale on Linear Error [S]: 1.960

Three-Dimensional

Propagated Linear Error [E]: U.S.

Constant Term [C]: 0.000 ft

Scale on Linear Error [S]: 1.960

Adjustment Statistics

Number of Iterations for Successful Adjustment: 2

Network Reference Factor: 1.00

Chi Square Test (95%): Passed

Precision Confidence Level: 95%
Degrees of Freedom: 78

Post Processed Vector Statistics

Reference Factor: 1.00
Redundancy Number: 78.00
A Priori Scalar: 2.14

Control Coordinate Comparisons

Values shown are control coordinates minus adjusted coordinates.

Point ID	ΔEasting (US survey foot)	ΔNorthing (US survey foot)	ΔElevation (US survey foot)	ΔHeight (US survey foot)
DEV1	-0.040	-0.006	?	0.025
FSHS	-0.015	0.043	?	-0.039
GRIS	0.002	-0.017	?	0.027

Control Point Constraints

Point ID	Type	East σ (US survey foot)	North σ (US survey foot)	Height σ (US survey foot)	Elevation σ (US survey foot)
HOUM	Local	Fixed	Fixed	Fixed	
Fixed = 0.000003(US survey foot)					

Adjusted Grid Coordinates

Point ID	Easting (US survey foot)	Easting Error (US survey foot)	Northing (US survey foot)	Northing Error (US survey foot)	Elevation (US survey foot)	Elevation Error (US survey foot)	Constraint
DEV1	3152130.399	0.023	-117001.382	0.023	112.969	0.024	
FSHS	3227265.780	0.023	474730.211	0.023	37.464	0.025	
	3719590.181		281033.491				

GRIS		0.023		0.023	27.348	0.024	
HOUM	3474618.955	?	397729.333	?	45.350	?	LLh
TE48-SM-01 (COON)	3408702.147	0.023	201740.531	0.023	1.477	0.025	

Adjusted Geodetic Coordinates

Point ID	Latitude	Longitude	Height (US survey foot)	Height Error (US survey foot)	Constraint
DEV1	N28°10'39.742732231"	W91°43'57.509876330"	34.575	0.024	
FSHS	N29°48'19.102817433"	W91°30'08.051073434"	-47.549	0.025	
GRIS	N29°15'55.883167151"	W89°57'26.262279193"	-51.313	0.024	
HOUM	N29°35'32.109640000"	W90°43'24.988470000"	-37.182	?	LLh
TE48-SM-01 (COON)	N29°03'14.791136597"	W90°55'59.373766236"	-77.518	0.025	

Adjusted ECEF Coordinates

Point ID	X (US survey foot)	X Error (US survey foot)	Y (US survey foot)	Y Error (US survey foot)	Z (US survey foot)	Z Error (US survey foot)	3D Error (US survey foot)	Constraint
DEV1	-558134.754	0.023	-18451026.857	0.024	9822435.339	0.023	0.040	
FSHS	-476410.891	0.023	-18166300.675	0.025	10340063.694	0.023	0.041	
GRIS	13616.874	0.023	-18269305.496	0.024	10169272.619	0.023	0.040	
HOUM	-229986.085	?	-18209490.634	?	10272765.225	?	?	LLh
TE48-SM-	-298143.377		-18304318.818		10102124.217			

01 (COON)		0.023		0.025		0.023	0.041	

Error Ellipse Components

Point ID	Semi-major axis (US survey foot)	Semi-minor axis (US survey foot)	Azimuth
DEV1	0.029	0.028	42°
FSHS	0.029	0.028	102°
GRIS	0.029	0.028	97°
TE48-SM-01 (COON)	0.028	0.028	16°

Adjusted GNSS Observations

Observation ID		Observation	A-posteriori Error	Residual	Standardized Residual
DEV1 --> TE48-SM-01 (COON) (PV1077)	Az.	38°38'31"	0.011 sec	-0.002 sec	-0.136
	ΔHt.	-112.093 ft	0.026 ft	-0.036 ft	-1.173
	Ellip Dist.	409084.735 ft	0.023 ft	0.107 ft	3.582
FSHS --> TE48-SM-01 (COON) (PV1079)	Az.	146°18'30"	0.014 sec	-0.064 sec	-3.426
	ΔHt.	-29.968 ft	0.026 ft	-0.031 ft	-0.995
	Ellip Dist.	327790.117 ft	0.023 ft	-0.029 ft	-0.974
HOUM --> TE48-SM-01 (COON) (PV1104)	Az.	198°53'36"	0.023 sec	-0.025 sec	-0.861
	ΔHt.	-40.336 ft	0.025 ft	-0.031 ft	-1.022
	Ellip Dist.	206777.026 ft	0.023 ft	-0.095 ft	-3.257
GRIS --> TE48-SM-01 (COON) (PV1080)	Az.	256°22'25"	0.015 sec	0.047 sec	2.555
	ΔHt.	-26.204 ft	0.026 ft	-0.030 ft	-0.979
	Ellip	320830.083	0.023 ft	-0.072 ft	-2.434

	Dist.	ft			
HOUM --> TE48-SM-01 (COON) (PV1108)	**Az.**	198°53'36"	0.023 sec	0.011 sec	0.367
	ΔHt.	-40.336 ft	0.025 ft	0.025 ft	0.751
	Ellip Dist.	206777.026 ft	0.023 ft	0.070 ft	2.345
FSHS --> TE48-SM-01 (COON) (PV1083)	**Az.**	146°18'30"	0.014 sec	0.040 sec	2.041
	ΔHt.	-29.968 ft	0.026 ft	-0.002 ft	-0.056
	Ellip Dist.	327790.117 ft	0.023 ft	0.022 ft	0.663
GRIS --> TE48-SM-01 (COON) (PV1084)	**Az.**	256°22'25"	0.015 sec	-0.008 sec	-0.357
	ΔHt.	-26.204 ft	0.026 ft	-0.100 ft	-1.559
	Ellip Dist.	320830.083 ft	0.023 ft	0.061 ft	1.850
DEV1 --> TE48-SM-01 (COON) (PV1081)	**Az.**	38°38'31"	0.011 sec	0.002 sec	0.162
	ΔHt.	-112.093 ft	0.026 ft	0.013 ft	0.382
	Ellip Dist.	409084.735 ft	0.023 ft	-0.054 ft	-1.767
HOUM --> TE48-SM-01 (COON) (PV1100)	**Az.**	198°53'36"	0.023 sec	0.010 sec	0.351
	ΔHt.	-40.336 ft	0.025 ft	0.048 ft	1.483
	Ellip Dist.	206777.026 ft	0.023 ft	0.050 ft	1.679
DEV1 --> TE48-SM-01 (COON) (PV1073)	**Az.**	38°38'31"	0.011 sec	0.000 sec	0.012
	ΔHt.	-112.093 ft	0.026 ft	0.034 ft	1.089
	Ellip Dist.	409084.735 ft	0.023 ft	-0.044 ft	-1.471
FSHS --> TE48-SM-01 (COON) (PV1075)	**Az.**	146°18'30"	0.014 sec	0.023 sec	1.261
	ΔHt.	-29.968 ft	0.026 ft	0.019 ft	0.587
	Ellip Dist.	327790.117 ft	0.023 ft	0.023 ft	0.783
GRIS --> TE48-SM-01 (COON) (PV1076)	**Az.**	256°22'25"	0.015 sec	-0.018 sec	-0.975
	ΔHt.	-26.204 ft	0.026 ft	0.041 ft	1.145
	Ellip	320830.083			

	Dist.	ft	0.023 ft	0.034 ft	1.150
DEV1 --> FSHS (PV1070)	**Az.**	7°02'20"	0.008 sec	-0.001 sec	-0.101
	ΔHt.	-82.124 ft	0.026 ft	-0.002 ft	-0.034
	Ellip Dist.	596415.462 ft	0.023 ft	-0.017 ft	-0.536
GRIS --> HOUM (PV1111)	**Az.**	296°09'21"	0.017 sec	-0.011 sec	-0.480
	ΔHt.	14.132 ft	0.024 ft	0.012 ft	0.418
	Ellip Dist.	271352.690 ft	0.023 ft	-0.005 ft	-0.179
GRIS --> DEV1 (PV1067)	**Az.**	235°37'34"	0.007 sec	0.001 sec	0.084
	ΔHt.	85.888 ft	0.025 ft	-0.013 ft	-0.453
	Ellip Dist.	693010.121 ft	0.023 ft	-0.005 ft	-0.179
GRIS --> FSHS (PV1048)	**Az.**	292°09'28"	0.009 sec	0.005 sec	0.403
	ΔHt.	3.764 ft	0.026 ft	-0.001 ft	-0.047
	Ellip Dist.	529077.524 ft	0.023 ft	-0.005 ft	-0.163
DEV1 --> HOUM (PV1101)	**Az.**	31°52'43"	0.008 sec	-0.002 sec	-0.180
	ΔHt.	-71.757 ft	0.024 ft	-0.011 ft	-0.353
	Ellip Dist.	607325.600 ft	0.023 ft	0.003 ft	0.099
GRIS --> HOUM (PV1103)	**Az.**	296°09'21"	0.017 sec	-0.002 sec	-0.082
	ΔHt.	14.132 ft	0.024 ft	0.010 ft	0.337
	Ellip Dist.	271352.690 ft	0.023 ft	0.004 ft	0.148
GRIS --> FSHS (PV1050)	**Az.**	292°09'28"	0.009 sec	-0.002 sec	-0.139
	ΔHt.	3.764 ft	0.026 ft	0.002 ft	0.039
	Ellip Dist.	529077.524 ft	0.023 ft	-0.011 ft	-0.316
GRIS --> HOUM (PV1107)	**Az.**	296°09'21"	0.017 sec	0.002 sec	0.071
	ΔHt.	14.132 ft	0.024 ft	0.008 ft	0.295

	Ellip Dist.	271352.690 ft	0.023 ft	-0.004 ft	-0.139
GRIS --> DEV1 (PV1063)	**Az.**	235°37'34"	0.007 sec	-0.001 sec	-0.127
	ΔHt.	85.888 ft	0.025 ft	0.008 ft	0.268
	Ellip Dist.	693010.121 ft	0.023 ft	0.007 ft	0.243
FSHS --> HOUM (PV1106)	**Az.**	107°12'30"	0.018 sec	0.005 sec	0.201
	ΔHt.	10.368 ft	0.025 ft	0.005 ft	0.190
	Ellip Dist.	259076.765 ft	0.023 ft	0.007 ft	0.243
FSHS --> HOUM (PV1110)	**Az.**	107°12'30"	0.018 sec	-0.001 sec	-0.033
	ΔHt.	10.368 ft	0.025 ft	0.003 ft	0.074
	Ellip Dist.	259076.765 ft	0.023 ft	-0.007 ft	-0.221
DEV1 --> HOUM (PV1105)	**Az.**	31°52'43"	0.008 sec	0.002 sec	0.194
	ΔHt.	-71.757 ft	0.024 ft	0.003 ft	0.103
	Ellip Dist.	607325.600 ft	0.023 ft	-0.001 ft	-0.034
DEV1 --> HOUM (PV1109)	**Az.**	31°52'43"	0.008 sec	0.000 sec	-0.047
	ΔHt.	-71.757 ft	0.024 ft	-0.006 ft	-0.171
	Ellip Dist.	607325.600 ft	0.023 ft	0.002 ft	0.064
DEV1 --> FSHS (PV1066)	**Az.**	7°02'20"	0.008 sec	0.000 sec	-0.047
	ΔHt.	-82.124 ft	0.026 ft	0.003 ft	0.116
	Ellip Dist.	596415.462 ft	0.023 ft	-0.004 ft	-0.140
DEV1 --> FSHS (PV1062)	**Az.**	7°02'20"	0.008 sec	-0.001 sec	-0.058
	ΔHt.	-82.124 ft	0.026 ft	-0.004 ft	-0.132
	Ellip Dist.	596415.462 ft	0.023 ft	0.002 ft	0.066
FSHS --> HOUM (PV1102)	**Az.**	107°12'30"	0.018 sec	0.003 sec	0.124
	ΔHt.	10.368 ft	0.025 ft	0.002 ft	0.054

	Ellip Dist.	259076.765 ft	0.023 ft	0.000 ft	-0.011
GRIS --> FSHS (PV1046)	**Az.**	292°09'28"	0.009 sec	0.001 sec	0.086
	ΔHt.	3.764 ft	0.026 ft	0.002 ft	0.066
	Ellip Dist.	529077.524 ft	0.023 ft	-0.001 ft	-0.028
GRIS --> DEV1 (PV1071)	**Az.**	235°37'34"	0.007 sec	0.000 sec	0.008
	ΔHt.	85.888 ft	0.025 ft	0.000 ft	0.008
	Ellip Dist.	693010.121 ft	0.023 ft	0.002 ft	0.054

Covariance Terms

From Point	To Point		Components	A-posteriori Error	Horiz. Precision (Ratio)	3D Precision (Ratio)
DEV1	HOUM	**Az.**	31°52'43"	0.008 sec	1 : 26591500	1 : 26591875
		ΔHt.	-71.757 ft	0.024 ft		
		ΔElev.	-67.619 ft	0.024 ft		
		Ellip Dist.	607325.600 ft	0.023 ft		
DEV1	TE48-SM-01 (COON)	**Az.**	38°38'31"	0.011 sec	1 : 17783171	1 : 17783137
		ΔHt.	-112.093 ft	0.026 ft		
		ΔElev.	-111.492 ft	0.026 ft		
		Ellip Dist.	409084.735 ft	0.023 ft		
FSHS	DEV1	**Az.**	187°09'02"	0.008 sec	1 : 25956782	1 : 25956898
		ΔHt.	82.124 ft	0.026 ft		
		ΔElev.	75.505 ft	0.026 ft		
		Ellip Dist.	596415.462 ft	0.023 ft		
FSHS	HOUM	**Az.**	107°12'30"	0.018 sec	1 : 11279975	1 : 11279941
		ΔHt.	10.368 ft	0.025 ft		

		ΔElev.	7.887 ft	0.025 ft		
		Ellip Dist.	259076.765 ft	0.023 ft		
FSHS	TE48-SM-01 (COON)	**Az.**	146°18'30"	0.014 sec	1 : 14221332	1 : 14221471
		ΔHt.	-29.968 ft	0.026 ft		
		ΔElev.	-35.987 ft	0.026 ft		
		Ellip Dist.	327790.117 ft	0.023 ft		
GRIS	DEV1	**Az.**	235°37'34"	0.007 sec	1 : 30251864	1 : 30250548
		ΔHt.	85.888 ft	0.025 ft		
		ΔElev.	85.621 ft	0.025 ft		
		Ellip Dist.	693010.121 ft	0.023 ft		
GRIS	FSHS	**Az.**	292°09'28"	0.009 sec	1 : 22638798	1 : 22641906
		ΔHt.	3.764 ft	0.026 ft		
		ΔElev.	10.116 ft	0.026 ft		
		Ellip Dist.	529077.524 ft	0.023 ft		
GRIS	HOUM	**Az.**	296°09'21"	0.017 sec	1 : 11847663	1 : 11849112
		ΔHt.	14.132 ft	0.024 ft		
		ΔElev.	18.003 ft	0.024 ft		
		Ellip Dist.	271352.690 ft	0.023 ft		
GRIS	TE48-SM-01 (COON)	**Az.**	256°22'25"	0.015 sec	1 : 13933051	1 : 13930367
		ΔHt.	-26.204 ft	0.026 ft		
		ΔElev.	-25.871 ft	0.026 ft		
		Ellip Dist.	320830.083 ft	0.023 ft		
TE48-SM-01 (COON)	HOUM	**Az.**	18°47'26"	0.023 sec	1 : 9077293	1 : 9077371
		ΔHt.	40.336 ft	0.025 ft		
		ΔElev.	43.874 ft	0.025 ft		
		Ellip Dist.	206777.026 ft	0.023 ft		

APPENDIX 7

Fully Constrained Network Adjustment Report

T Baker Smith, LLC	www.tbsmith.com

Project File Data		Coordinate System	
Name:	P:\Y-2015\2015.0072\FieldData\TBC_Files\2015.0072_cp.vce	Name:	US State Plane 1983
Size:	1 MB	Datum:	NAD 1983 (Conus)
Modified:	3/18/2015 4:01:22 PM (UTC:-5)	Zone:	Louisiana South 1702
Time zone:	Central Standard Time	Geoid:	GEOID12A (Conus)
Reference number:		Vertical datum:	NAVD88 (2011)
Description:			

Network Adjustment Report

Adjustment Settings

Set-Up Errors

GNSS

Error in Height of Antenna: 0.003 ft

Centering Error: 0.010 ft

Covariance Display

Horizontal:

Propagated Linear Error [E]: U.S.

Constant Term [C]: 0.000 ft

Scale on Linear Error [S]: 1.960

Three-Dimensional

Propagated Linear Error [E]: U.S.

Constant Term [C]: 0.000 ft

Scale on Linear Error [S]: 1.960

Adjustment Statistics

Number of Iterations for Successful Adjustment: 2

Network Reference Factor: 1.00

Chi Square Test (95%): Passed

Precision Confidence Level: 95%
Degrees of Freedom: 83

Post Processed Vector Statistics

Reference Factor: 1.00
Redundancy Number: 83.00
A Priori Scalar: 2.17

Control Point Constraints

Point ID	Type	East σ (US survey foot)	North σ (US survey foot)	Height σ (US survey foot)	Elevation σ (US survey foot)
DEV1	Local	Fixed	Fixed	Fixed	
FSHS	Local	Fixed	Fixed	Fixed	
GRIS	Local	Fixed	Fixed	Fixed	
HOUM	Local	Fixed	Fixed	Fixed	
Fixed = 0.000003(US survey foot)					

Adjusted Grid Coordinates

Point ID	Easting (US survey foot)	Easting Error (US survey foot)	Northing (US survey foot)	Northing Error (US survey foot)	Elevation (US survey foot)	Elevation Error (US survey foot)	Constraint
DEV1	3152130.360	?	-117001.388	?	112.994	?	LLh
FSHS	3227265.765	?	474730.254	?	37.424	?	LLh
GRIS	3719590.183	?	281033.474	?	27.375	?	LLh
HOUM	3474618.955	?	397729.333	?	45.350	?	LLh
TE48-SM-01 (COON)	3408702.132	0.018	201740.531	0.018	1.488	0.021	

Adjusted Geodetic Coordinates

Point ID	Latitude	Longitude	Height (US survey foot)	Height Error (US survey foot)	Constraint
DEV1	N28°10'39.742670000"	W91°43'57.510320000"	34.600	?	LLh
FSHS	N29°48'19.103240000"	W91°30'08.051250000"	-47.588	?	LLh
GRIS	N29°15'55.883000000"	W89°57'26.262260000"	-51.286	?	LLh
HOUM	N29°35'32.109640000"	W90°43'24.988470000"	-37.182	?	LLh
TE48-SM-01 (COON)	N29°03'14.791141076"	W90°55'59.373941475"	-77.506	0.021	

Adjusted ECEF Coordinates

Point ID	X (US survey foot)	X Error (US survey foot)	Y (US survey foot)	Y Error (US survey foot)	Z (US survey foot)	Z Error (US survey foot)	3D Error (US survey foot)	Constraint
DEV1	-558134.795	?	-18451026.880	?	9822435.345	?	?	LLh
FSHS	-476410.906	?	-18166300.619	?	10340063.712	?	?	LLh
GRIS	13616.876	?	-18269305.528	?	10169272.618	?	?	LLh
HOUM	-229986.085	?	-18209490.634	?	10272765.225	?	?	LLh
TE48-SM-01 (COON)	-298143.393	0.018	-18304318.827	0.021	10102124.223	0.019	0.033	

Error Ellipse Components

	Semi-major axis	Semi-minor axis	

Point ID	(US survey foot)	(US survey foot)	Azimuth
TE48-SM-01 (COON)	0.023	0.023	175°

Adjusted GNSS Observations

Transformation Parameters

Deflection in Latitude:	-0.023 sec **(95%)**	0.009 sec
Deflection in Longitude:	-0.019 sec **(95%)**	0.009 sec
Azimuth Rotation:	-0.011 sec **(95%)**	0.005 sec
Scale Factor:	1.00000006 **(95%)**	0.00000003

Observation ID		Observation	A-posteriori Error	Residual	Standardized Residual
DEV1 --> TE48-SM-01 (COON) (PV1077)	**Az.**	38°38'31"	0.011 sec	-0.006 sec	-0.390
	ΔHt.	-112.093 ft	0.026 ft	-0.036 ft	-1.162
	Ellip Dist.	409084.731 ft	0.022 ft	0.104 ft	3.383
HOUM --> TE48-SM-01 (COON) (PV1104)	**Az.**	198°53'36"	0.019 sec	-0.022 sec	-0.724
	ΔHt.	-40.341 ft	0.022 ft	-0.036 ft	-1.146
	Ellip Dist.	206777.018 ft	0.019 ft	-0.103 ft	-3.382
FSHS --> TE48-SM-01 (COON) (PV1079)	**Az.**	146°18'30"	0.012 sec	-0.060 sec	-3.142
	ΔHt.	-29.965 ft	0.025 ft	-0.027 ft	-0.857
	Ellip Dist.	327790.134 ft	0.020 ft	-0.013 ft	-0.427
GRIS --> TE48-SM-01 (COON) (PV1080)	**Az.**	256°22'25"	0.013 sec	0.049 sec	2.563
	ΔHt.	-26.202 ft	0.025 ft	-0.027 ft	-0.861
	Ellip Dist.	320830.076 ft	0.020 ft	-0.078 ft	-2.554
FSHS --> TE48-SM-01 (COON) (PV1083)	**Az.**	146°18'30"	0.012 sec	0.043 sec	2.130
	ΔHt.	-29.965 ft	0.025 ft	0.002 ft	0.020
	Ellip Dist.	327790.134 ft	0.020 ft	0.037 ft	1.101

HOUM --> TE48-SM-01 (COON) (PV1108)	**Az.**	198°53'36"	0.019 sec	0.014 sec	0.457
	ΔHt.	-40.341 ft	0.022 ft	0.020 ft	0.578
	Ellip Dist.	206777.018 ft	0.019 ft	0.062 ft	2.012
DEV1 --> TE48-SM-01 (COON) (PV1081)	**Az.**	38°38'31"	0.011 sec	-0.002 sec	-0.103
	ΔHt.	-112.093 ft	0.026 ft	0.013 ft	0.373
	Ellip Dist.	409084.731 ft	0.022 ft	-0.057 ft	-1.843
GRIS --> TE48-SM-01 (COON) (PV1084)	**Az.**	256°22'25"	0.013 sec	-0.006 sec	-0.275
	ΔHt.	-26.202 ft	0.025 ft	-0.097 ft	-1.492
	Ellip Dist.	320830.076 ft	0.020 ft	0.055 ft	1.619
DEV1 --> TE48-SM-01 (COON) (PV1073)	**Az.**	38°38'31"	0.011 sec	-0.004 sec	-0.251
	ΔHt.	-112.093 ft	0.026 ft	0.033 ft	1.070
	Ellip Dist.	409084.731 ft	0.022 ft	-0.047 ft	-1.556
FSHS --> TE48-SM-01 (COON) (PV1075)	**Az.**	146°18'30"	0.012 sec	0.026 sec	1.382
	ΔHt.	-29.965 ft	0.025 ft	0.023 ft	0.682
	Ellip Dist.	327790.134 ft	0.020 ft	0.039 ft	1.263
HOUM --> TE48-SM-01 (COON) (PV1100)	**Az.**	198°53'36"	0.019 sec	0.013 sec	0.442
	ΔHt.	-40.341 ft	0.022 ft	0.043 ft	1.283
	Ellip Dist.	206777.018 ft	0.019 ft	0.042 ft	1.370
GRIS --> TE48-SM-01 (COON) (PV1076)	**Az.**	256°22'25"	0.013 sec	-0.016 sec	-0.854
	ΔHt.	-26.202 ft	0.025 ft	0.043 ft	1.204
	Ellip Dist.	320830.076 ft	0.020 ft	0.028 ft	0.914
GRIS --> FSHS (PV1048)	**Az.**	292°09'28"	0.005 sec	0.012 sec	0.989
	ΔHt.	3.763 ft	0.026 ft	-0.002 ft	-0.081
	Ellip Dist.	529077.530 ft	0.014 ft	0.002 ft	0.054

FSHS --> HOUM (PV1106)	**Az.**	107°12'30"	0.005 sec	0.022 sec	0.872
	ΔHt.	10.376 ft	0.012 ft	0.014 ft	0.454
	Ellip Dist.	259076.777 ft	0.007 ft	0.019 ft	0.593
FSHS --> HOUM (PV1102)	**Az.**	107°12'30"	0.005 sec	0.020 sec	0.799
	ΔHt.	10.376 ft	0.012 ft	0.010 ft	0.310
	Ellip Dist.	259076.777 ft	0.007 ft	0.012 ft	0.360
GRIS --> FSHS (PV1046)	**Az.**	292°09'28"	0.005 sec	0.008 sec	0.691
	ΔHt.	3.763 ft	0.026 ft	0.001 ft	0.033
	Ellip Dist.	529077.530 ft	0.014 ft	0.006 ft	0.181
GRIS --> HOUM (PV1111)	**Az.**	296°09'21"	0.005 sec	-0.012 sec	-0.484
	ΔHt.	14.139 ft	0.013 ft	0.020 ft	0.642
	Ellip Dist.	271352.683 ft	0.007 ft	-0.012 ft	-0.381
FSHS --> HOUM (PV1110)	**Az.**	107°12'30"	0.005 sec	0.016 sec	0.618
	ΔHt.	10.376 ft	0.012 ft	0.012 ft	0.262
	Ellip Dist.	259076.777 ft	0.007 ft	0.005 ft	0.143
DEV1 --> FSHS (PV1062)	**Az.**	7°02'20"	0.005 sec	-0.006 sec	-0.542
	ΔHt.	-82.128 ft	0.024 ft	-0.008 ft	-0.257
	Ellip Dist.	596415.478 ft	0.016 ft	0.018 ft	0.576
DEV1 --> FSHS (PV1070)	**Az.**	7°02'20"	0.005 sec	-0.006 sec	-0.572
	ΔHt.	-82.128 ft	0.024 ft	-0.006 ft	-0.129
	Ellip Dist.	596415.478 ft	0.016 ft	-0.001 ft	-0.033
GRIS --> DEV1 (PV1067)	**Az.**	235°37'34"	0.005 sec	-0.001 sec	-0.119
	ΔHt.	85.891 ft	0.024 ft	-0.010 ft	-0.334
	Ellip Dist.	693010.108 ft	0.018 ft	-0.018 ft	-0.565

GRIS --> HOUM (PV1103)	**Az.**	296°09'21"	0.005 sec	-0.003 sec	-0.117
	ΔHt.	14.139 ft	0.013 ft	0.018 ft	0.558
	Ellip Dist.	271352.683 ft	0.007 ft	-0.003 ft	-0.082
GRIS --> HOUM (PV1107)	**Az.**	296°09'21"	0.005 sec	0.001 sec	0.024
	ΔHt.	14.139 ft	0.013 ft	0.016 ft	0.542
	Ellip Dist.	271352.683 ft	0.007 ft	-0.011 ft	-0.346
DEV1 --> FSHS (PV1066)	**Az.**	7°02'20"	0.005 sec	-0.006 sec	-0.521
	ΔHt.	-82.128 ft	0.024 ft	0.000 ft	-0.025
	Ellip Dist.	596415.478 ft	0.016 ft	0.012 ft	0.390
GRIS --> FSHS (PV1050)	**Az.**	292°09'28"	0.005 sec	0.006 sec	0.441
	ΔHt.	3.763 ft	0.026 ft	0.001 ft	0.020
	Ellip Dist.	529077.530 ft	0.014 ft	-0.005 ft	-0.129
GRIS --> DEV1 (PV1063)	**Az.**	235°37'34"	0.005 sec	-0.003 sec	-0.323
	ΔHt.	85.891 ft	0.024 ft	0.011 ft	0.365
	Ellip Dist.	693010.108 ft	0.018 ft	-0.005 ft	-0.163
DEV1 --> HOUM (PV1105)	**Az.**	31°52'43"	0.005 sec	0.001 sec	0.078
	ΔHt.	-71.753 ft	0.021 ft	0.008 ft	0.263
	Ellip Dist.	607325.590 ft	0.016 ft	-0.010 ft	-0.334
GRIS --> DEV1 (PV1071)	**Az.**	235°37'34"	0.005 sec	-0.002 sec	-0.192
	ΔHt.	85.891 ft	0.024 ft	0.003 ft	0.080
	Ellip Dist.	693010.108 ft	0.018 ft	-0.011 ft	-0.330
DEV1 --> HOUM (PV1101)	**Az.**	31°52'43"	0.005 sec	-0.003 sec	-0.279
	ΔHt.	-71.753 ft	0.021 ft	-0.006 ft	-0.186
	Ellip Dist.	607325.590 ft	0.016 ft	-0.006 ft	-0.206

DEV1 --> HOUM (PV1109)	**Az.**	31°52'43"	0.005 sec	-0.002 sec	-0.151
	ΔHt.	-71.753 ft	0.021 ft	-0.001 ft	-0.019
	Ellip Dist.	607325.590 ft	0.016 ft	-0.007 ft	-0.233

Covariance Terms

From Point	To Point		Components	A-posteriori Error	Horiz. Precision (Ratio)	3D Precision (Ratio)
DEV1	HOUM	**Az.**	31°52'43"	0.000 sec	1 : 0	1 : 0
		ΔHt.	-71.781 ft	0.000 ft		
		ΔElev.	-67.643 ft	0.000 ft		
		Ellip Dist.	607325.627 ft	0.000 ft		
DEV1	TE48-SM-01 (COON)	**Az.**	38°38'31"	0.009 sec	1 : 22173330	1 : 22173235
		ΔHt.	-112.106 ft	0.021 ft		
		ΔElev.	-111.506 ft	0.021 ft		
		Ellip Dist.	409084.755 ft	0.018 ft		
FSHS	DEV1	**Az.**	187°09'02"	0.000 sec	1 : 0	1 : 0
		ΔHt.	82.188 ft	0.000 ft		
		ΔElev.	75.569 ft	0.000 ft		
		Ellip Dist.	596415.514 ft	0.000 ft		
FSHS	HOUM	**Az.**	107°12'30"	0.000 sec	1 : 0	1 : 0
		ΔHt.	10.407 ft	0.000 ft		
		ΔElev.	7.926 ft	0.000 ft		
		Ellip Dist.	259076.792 ft	0.000 ft		
FSHS	TE48-SM-01 (COON)	**Az.**	146°18'30"	0.011 sec	1 : 17834302	1 : 17834691
		ΔHt.	-29.918 ft	0.021 ft		
		ΔElev.	-35.937 ft	0.021 ft		
		Ellip Dist.	327790.153 ft	0.018 ft		

GRIS	DEV1	**Az.**	235°37'34"	0.000 sec	1 : 0	1 : 0
		ΔHt.	85.886 ft	0.000 ft		
		ΔElev.	85.619 ft	0.000 ft		
		Ellip Dist.	693010.149 ft	0.000 ft		
GRIS	FSHS	**Az.**	292°09'28"	0.000 sec	1 : 0	1 : 0
		ΔHt.	3.697 ft	0.000 ft		
		ΔElev.	10.050 ft	0.000 ft		
		Ellip Dist.	529077.562 ft	0.000 ft		
GRIS	HOUM	**Az.**	296°09'21"	0.000 sec	1 : 0	1 : 0
		ΔHt.	14.104 ft	0.000 ft		
		ΔElev.	17.975 ft	0.000 ft		
		Ellip Dist.	271352.699 ft	0.000 ft		
GRIS	TE48-SM-01 (COON)	**Az.**	256°22'25"	0.012 sec	1 : 17537869	1 : 17538497
		ΔHt.	-26.220 ft	0.021 ft		
		ΔElev.	-25.887 ft	0.021 ft		
		Ellip Dist.	320830.095 ft	0.018 ft		
TE48-SM-01 (COON)	HOUM	**Az.**	18°47'26"	0.018 sec	1 : 11220557	1 : 11220848
		ΔHt.	40.325 ft	0.021 ft		
		ΔElev.	43.862 ft	0.021 ft		
		Ellip Dist.	206777.030 ft	0.018 ft		

APPENDIX 8

Loop Closures Report

Project File Data		Coordinate System	
Name:	P:\Y-2015\2015.0072\FieldData\TBC_Files\2015.0072_cp.vce	Name:	US State Plane 1983
Size:	1 MB	Datum:	NAD 1983 (Conus)
Modified:	3/18/2015 4:01:22 PM (UTC:-5)	Zone:	Louisiana South 1702
Time zone:	Central Standard Time	Geoid:	GEOID12A (Conus)
Reference number:		Vertical datum:	NAVD88 (2011)
Description:			

GNSS Loop Closure Results

Summary

Legs in loop: 3
Number of Loops: 270
Number Passed: 270
Number Failed: 0

	Length (US survey foot)	Δ3D (US survey foot)	ΔHoriz (US survey foot)	ΔVert (US survey foot)	PPM
Pass/Fail Criteria					1
Best		0.002	0.001	0.000	0.002
Worst		0.198	0.190	0.160	0.248
Average Loop	1266188.780	0.068	0.054	0.033	0.063
Standard Error	309838.258	0.096	0.083	0.048	0.069

APPENDIX 9

Field Notes

2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-48)

T COON SP83 / LA SOUTH 1702 / GEOID 12A

@ 2.25m OPUS 1114 - 1320

— RACCOON ISLAND BW SURVEY

— TRANSECTS OF MARSH CREATION CELL

TRANSECT	PTS	DESC
20 - 19	1100 - 1120	
18 - 17	1121 - 1144	
16 - 15	1145 - 1162	
14 - 13	1163 - 1186	
12 - 11	1187 - 1211	

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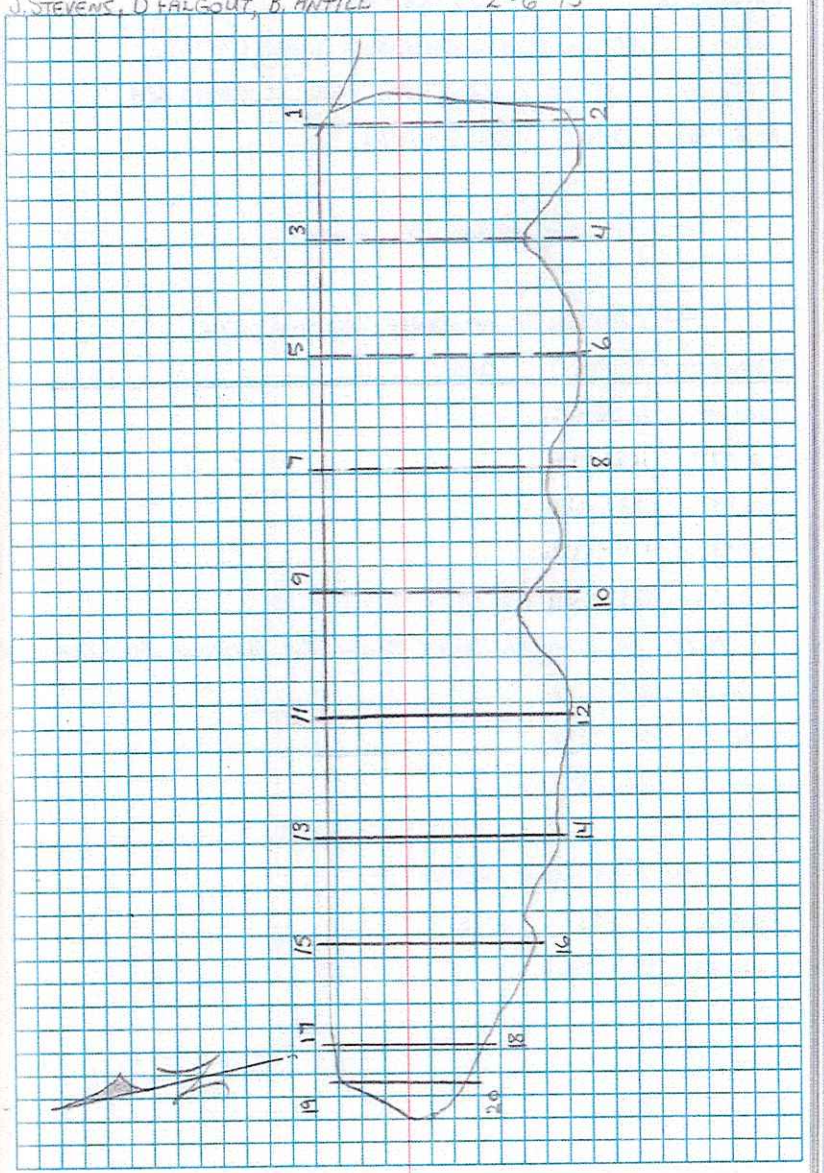

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2015.0072 TETRA-TECH

J. STEVENS, M. PELLEGRIN, T. FORET 2-10-15

RACCOON ISLAND BACKWATER SURVEY (TG-48)

π CAON SP83 / LA SOUTH 1702 / GEOID 12A

@ 2.25m OPUS 0907 - 1413

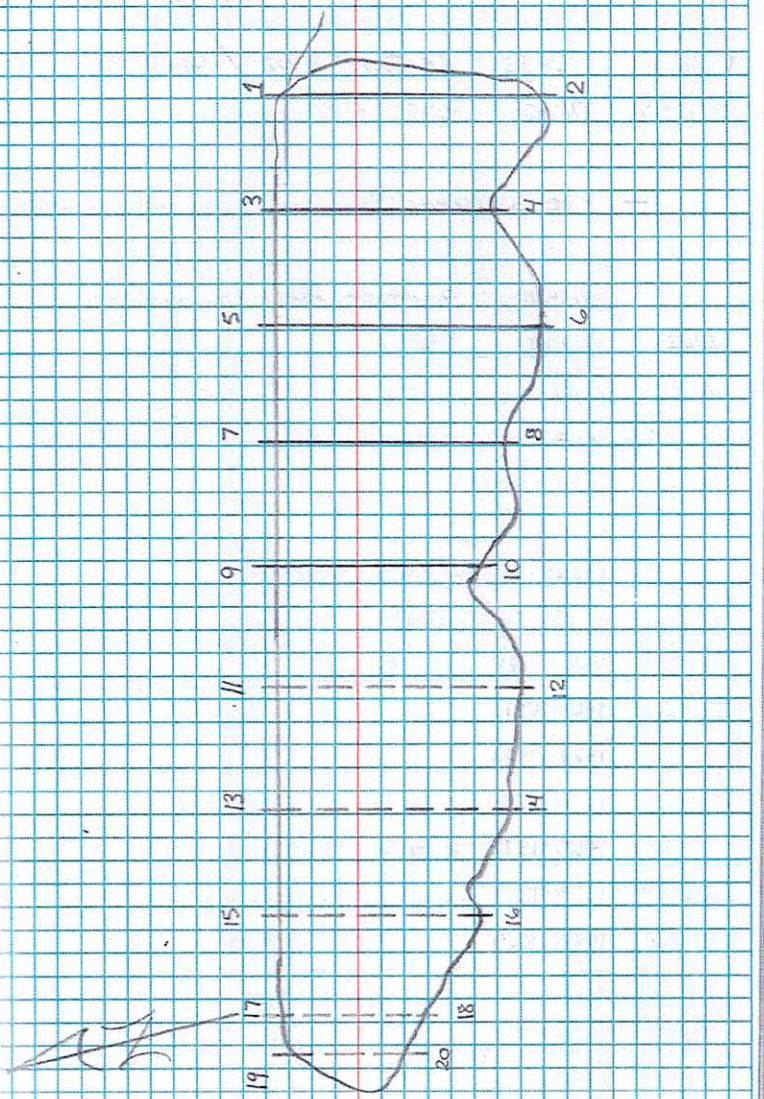
— RACCOON ISLAND BIN SURVEY

— TRANSECTS OF MARSH CREATION CELL

TRANSECT	PTS	DESC
10-9	1225-1252	
8-7	1253-1283	
6-5	1284-1310	
4-3	1311-1335	
2-1	1336-1363	
NOTE:	ADDITIONAL SHOTS TAKEN FOR PREVIOUS DAY'S TRANSECTS	
12-11	1212-1224	
14-13	1461-1466	
16-15	1467-1475	

— ROCK GRAIN PROFILE

PROFILE	PTS	DESC
21-22	1364-1460	



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2015.0072 TETRA-TECH

RACCOON ISLAND BASELINE SURVEY (TC-98)

T COON SP 83 / LA SOUTH 1702 / GEOID 12A

@ 2.25m OPUS 0756 - 1520

— 3 MIN (OBSERVED) SHOTS ON TBM'S AND MONUMENTS

CODE	PT	DESC
1001	•11001	TERREBONNE PARISH RACCOON ISLAND
1002	•11002	TBM1
1003	•11003	TBM3

NOTE: MONUMENT "PELICAN" HAS BEEN DISTURBED; NO SHOT TAKEN

— ROCK GROIN CROSS-SECTIONS

X-SEC	PTS	DESC	
23-24	1476-1497	-50' TO EOW	
25-26	1498-1521	"	
27-28	1522-1543	"	
29-30	1544-1564	"	
31-32	1565-1578	-50' TO 50'	INCOMPLETE
33-34	1579-1589	"	INCOMPLETE
35-36	1590-1609	"	INCOMPLETE
37-38	1610-1625	"	
39-40	1626-1641	"	
41-42	1642-1657	"	
43-44	1658-1664	ROCKS	NEEDS SOUNDINGS; 45-46 IN WATER

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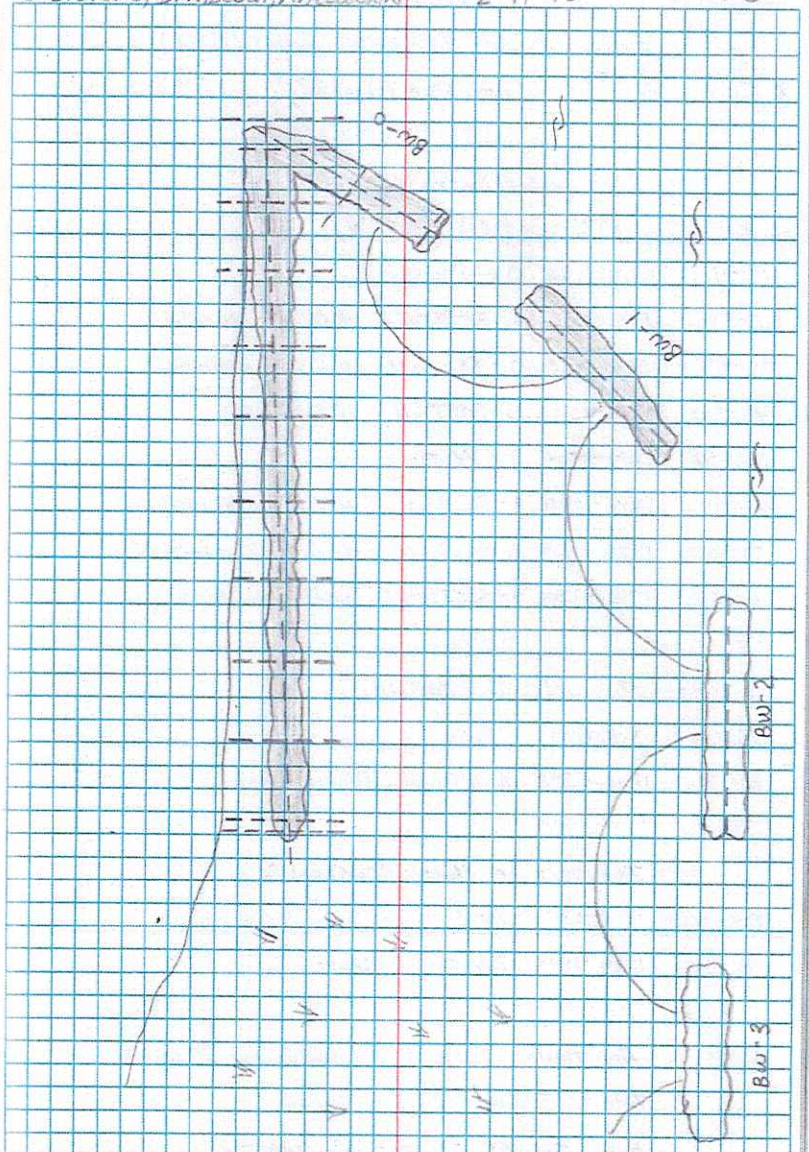

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2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TG-#8)

I COON @ 2.25 m CONT. FROM PAGE 28

— BREAKWATER SURVEYS

BW	PTS	DESC
47-48	1665-1690	O - PROFILE
53-54	1691-1695	O - SECTION NEEDS SOUNDINGS
51-52	1696-1703	O - SECTION NEEDS SOUNDINGS
49-50	1704	O - SECTION INCOMPLETE
55-56	1747-1805	I - PROFILE
57-58	1705-1724	I - SECTION NEEDS SOUNDINGS
59-60	1725-1739	I - SECTION NEEDS SOUNDINGS
61-62	1740-1746	I - SECTION NEEDS SOUNDINGS

— ROCK GROIN PROFILE

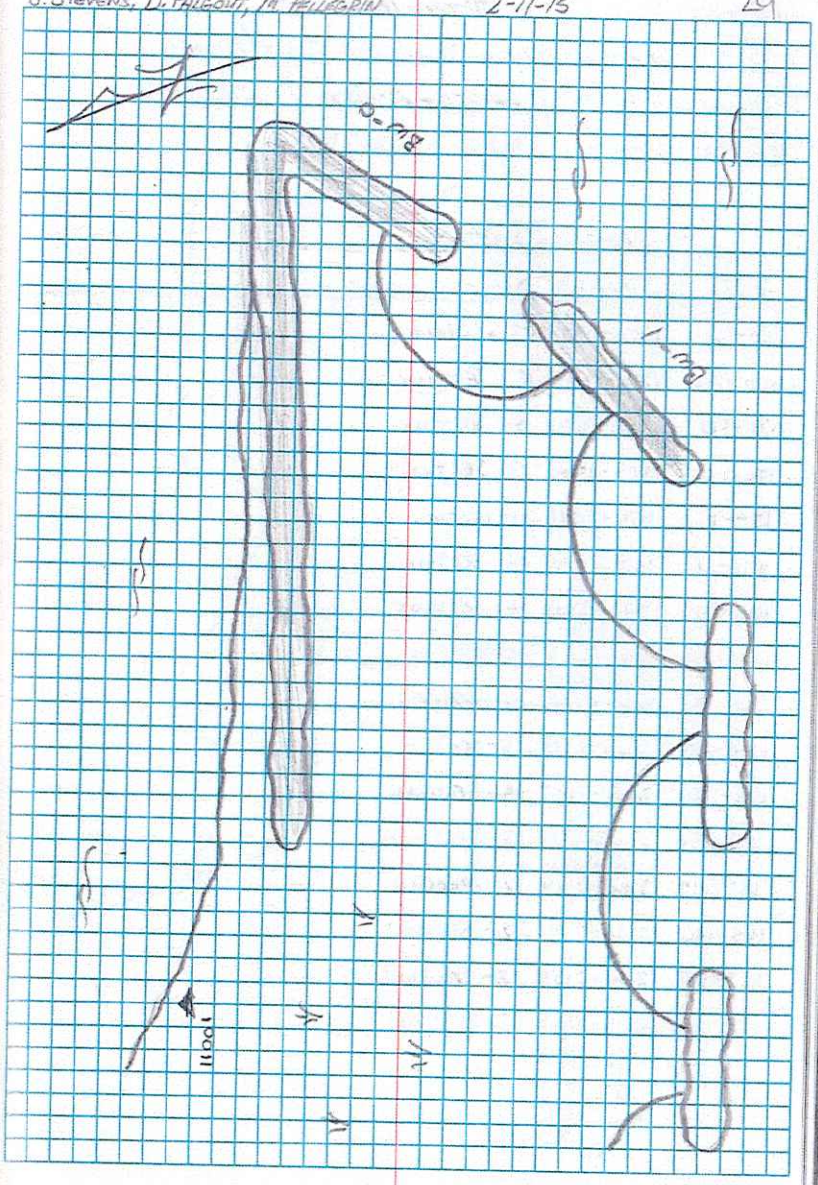
PROFILE	PTS	DESC
21-22	1806-1823	ADDITIONAL PROFILE SHOTS

— TRANSECT OF MARSH CREATION CELL

TRANSECT	PTS	DESC
14-13	1824-1825	ADDITIONAL SHOTS

NOTE: ADDITIONAL SURVEYS PERFORMED ON ISLAND.
AERIAL SURVEY - ERIC DEROCHE
BIRD SPECIES SURVEY - CONTRACTOR

J. STEVENS, D. FALGOUT, M. PELLEGRIN 2-11-15 29



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2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-42)

I COON SP83 / LA SOUTH 1702 / GEOID 12A

@ 2.25m OPUS 0829 - 1340

— BREAKWATER SURVEYS

BW	PTS	DESC
167-168	1826-1878	15 - PROFILE
169-170	1901-1911	15 - SECTION
171-172	1880-1892	15 - SECTION
173-174	1893-1900	15 - SECTION
159-160	1924-1977	14 - PROFILE
161-162	1978-1991	14 - SECTION
163-164	1992-2002	14 - SECTION
165-166	1912-1923	14 - SECTION
151-152	2015-2035 2048-2062	13 - PROFILE
153-154	2063-2073	13 - SECTION
155-156	2036-2047	13 - SECTION
157-158	2003-2014	13 - SECTION
143-144	2082-2095 2106-2119	12 - PROFILE
145-146	2120-2129	12 - SECTION
147-148	2096-2105	12 - SECTION
149-150	2074-2081	12 - SECTION

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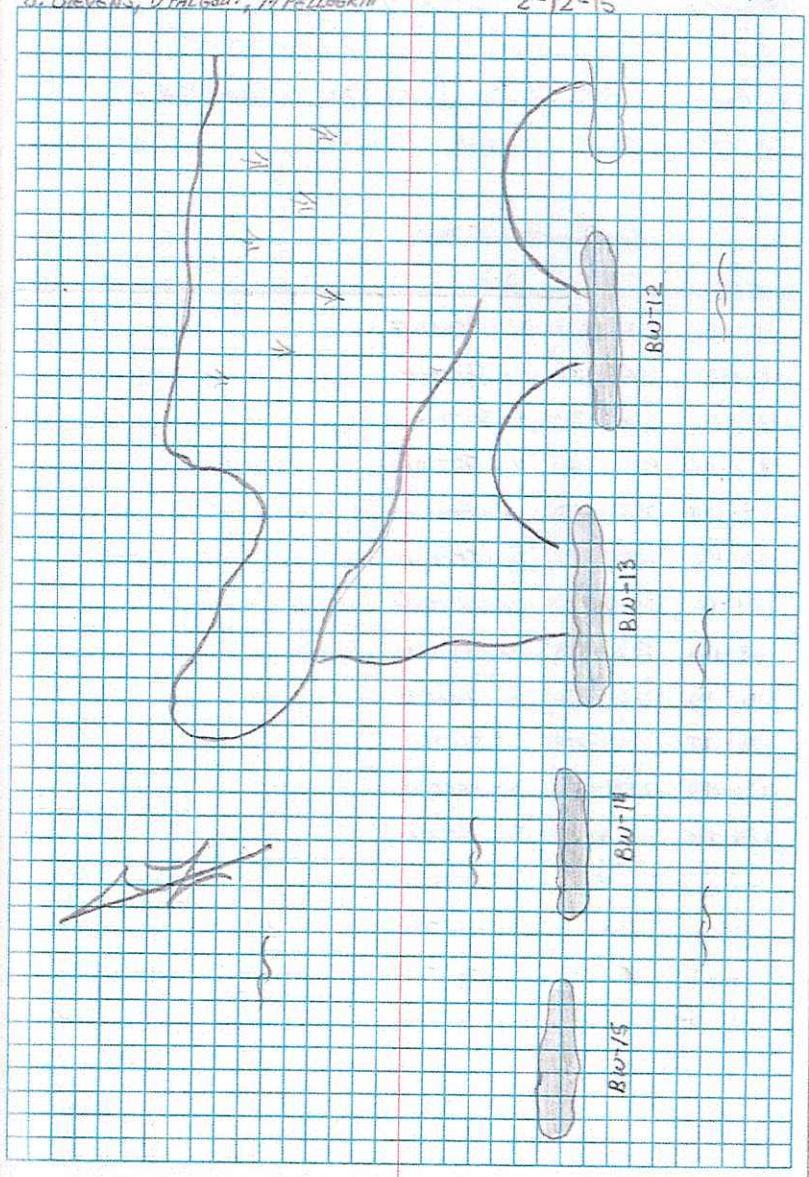

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2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TG-48)

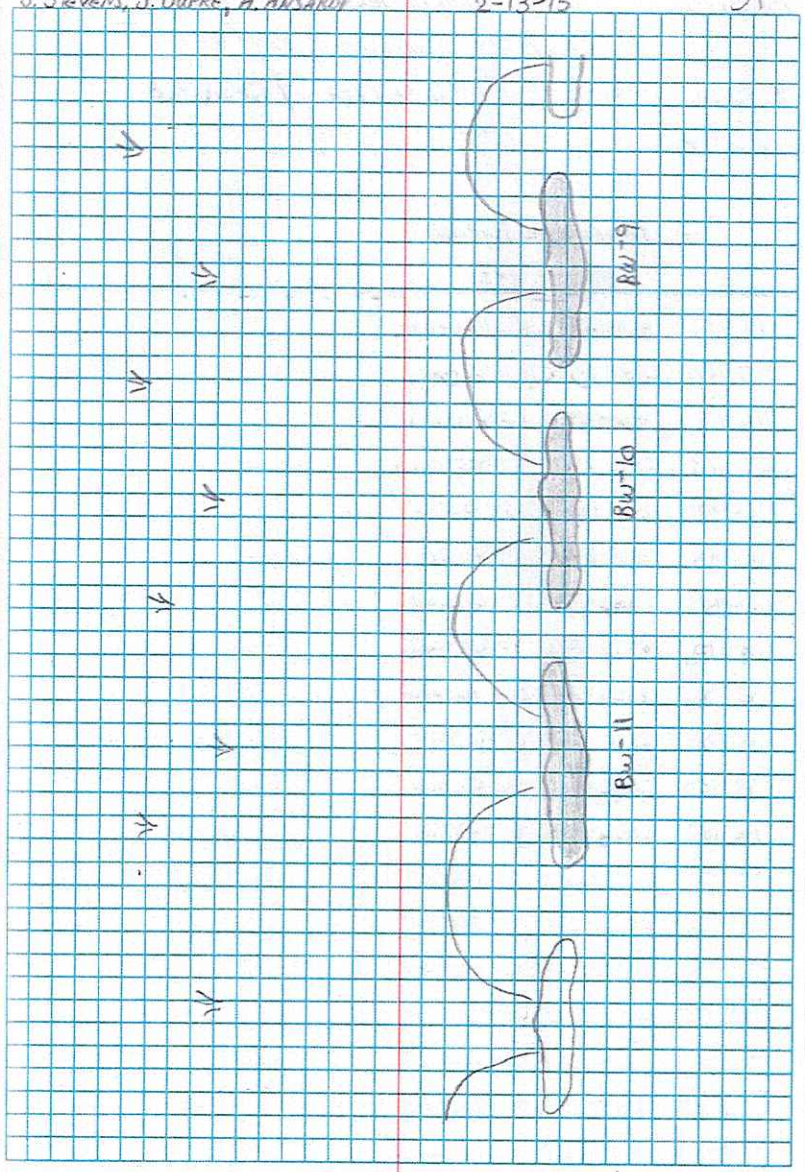
T COON SP83 / LA SOUTH 1702 / GEOID12A

@ 2.25m OPUS 0844 - 1248

- BREAKWATER SURVEY

BW	PTS	DESC
135-136	2142-2190	11 - PROFILE
137-138	2191-2206	11 - SECTION
139-140	2207-2219	11 - SECTION
141-142	2131-2141	11 - SECTION
127-128	2233-2284	10 - PROFILE
129-130	2285-2297	10 - SECTION
131-132	2298-2309	10 - SECTION
133-134	2220-2232	10 - SECTION
119-120	2320-2366	9 - PROFILE
121-122	2367-2380	9 - SECTION
123-124	2381-2393	9 - SECTION
125-126	2310-2319	9 - SECTION

J. STEVENS, J. DUPRE, A. ANSARDI 2-13-15 31



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2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (78-48)

T COON SPR3 / LA SOUTH 1702 / GEOID 12A

@ 2.25m

— BREAKWATER SURVEYS

BW	PTS	DESC
111-112	2408-2448	8 - PROFILE
113-114	2449-2459	8 - SECTION
115-116	2460-2471	8 - SECTION
117-118	2395-2407	8 - SECTION
103-104	2487-2517	7 - PROFILE
105-106	2518-2529	7 - SECTION
107-108	2530-2544	7 - SECTION
109-110	2472-2486	7 - SECTION
95-96	2557-2589	6 - PROFILE
97-98	2590-2601	6 - SECTION
99-100	2602-2615	6 - SECTION
101-102	2545-2556	6 - SECTION
87-88	2627-2659	5 - PROFILE
89-90	2660-2670	5 - SECTION
91-92	2671-2682	5 - SECTION
93-94	2616-2626	5 - SECTION
79-80	2689-2713	4 - PROFILE
83-84	2714-2725	4 - SECTION
85-86	2683-2688	4 - SECTION

J. STEVENS, J. DUDRG, A. ANSARDI 2-19-15

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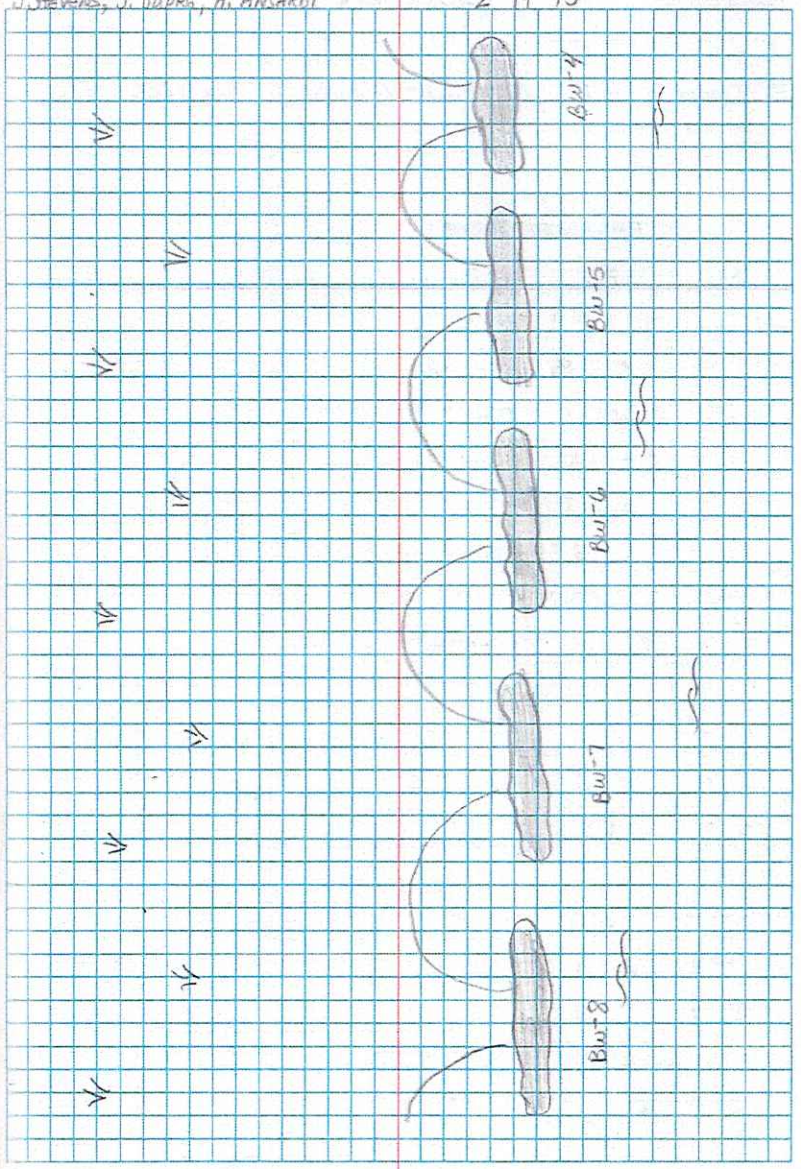

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2015.0072 TETRA-TECH

RACCOON ISLAND BASAKIMETER SURVEY (TE-48)

$\bar{x}$ COON @ 2.25m

PTS	STA	SND	PTS	STA	SND
1893-174	0+10	2.9	2002-163	0+10	3.2
	0+20	3.3		0+20	3.7
	0+30	2.8		0+30	4.8
1900-173	0+10	5.0		0+40	5.3
	0+20	5.8	1978-161	0+10	3.0
	0+30	7.2		0+20	3.5
	0+40	7.8		0+30	4.5
1892-171	0+10	4.5		0+40	5.3
	0+20	5.3	2014-157	0+10	3.5
	0+30	6.2		0+20	4.1
	0+40	6.5		0+30	5.1
1911-170	0+10	3.1		0+36	5.5
	0+20	2.9	2036-155	0+10	3.1
	0+30	2.9		0+20	4.5
1901-169	0+10	5.0		0+30	5.1
	0+20	5.5		0+36	5.3
	0+30	5.8	2063-153	0+10	3.1
	0+33	5.8		0+20	3.5
1923-165	0+10	4.2		0+30	4.8
	0+20	5.0		0+34	5.0
	0+30	6.1			
	0+37	6.3			

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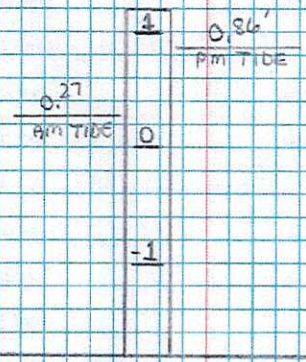
AM TIDE 0.27

PM TIDE 0.86



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2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (76-48)

T COON @ 2.25 m

PTS	STA	SND	PTS	STA	SND
2081-149	0+10	3.9	2191-137	0+10	2.5
	0+20	4.5		0+20	3.5
	0+30	5.1		0+30	4.9
	0+40	5.8		0+33	5.0
2096-147	0+10	2.9	2232-133	0+10	3.0
	0+20	4.2		0+20	4.3
	0+30	5.2		0+30	5.5
	0+35	5.5		0+36	5.8
2120-145	0+10	3.0	2298-131	0+10	3.0
	0+20	4.1		0+20	4.2
	0+30	6.5		0+30	5.0
	0+40	6.8	2285-129	0+10	4.0
2141-141	0+10	2.2		0+20	5.0
	0+20	4.3		0+30	5.4
	0+30	5.2		0+35	5.9
	0+40	5.8	2319-125	0+10	4.5
2219-139	0+10	2.0		0+20	6.0
	0+20	4.5		0+30	6.5
	0+30	5.5		0+40	7.1
	0+35	5.9		0+43	7.2

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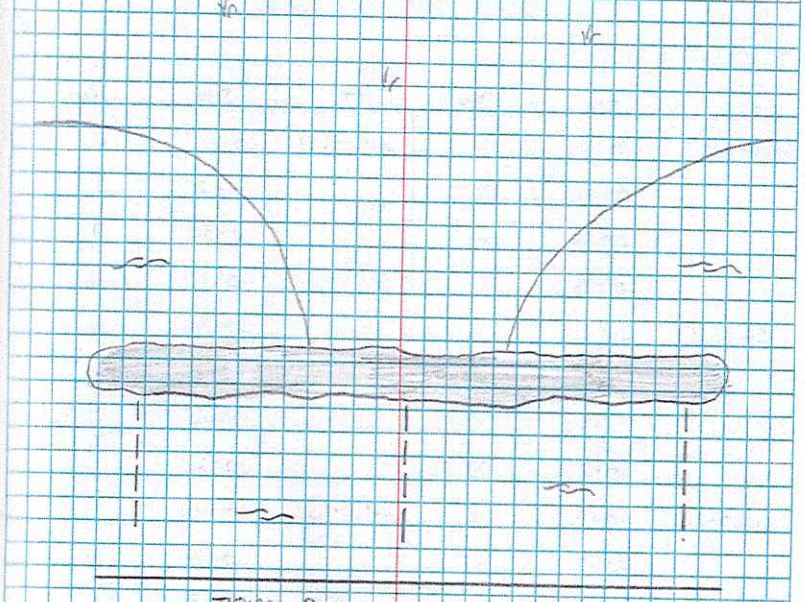


TYPICAL BREAKWATER SOUNDINGS

№. 4380

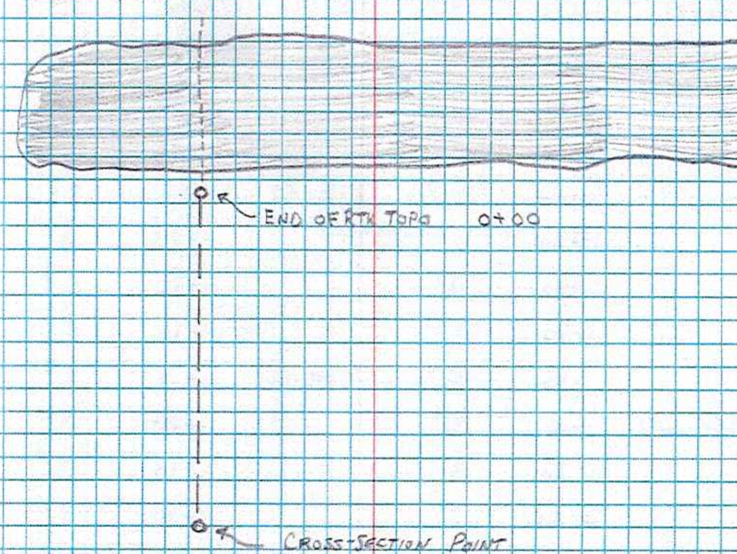
2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-48)

I COON @ $2.^{25}$m

PTS	STA	SND	PTS	STA	SND
2393-123	0+10	3.5	2486-109	0+10	4.7
	0+20	4.5		0+20	5.8
	0+30	6.0		0+30	7.0
	0+34	6.3	2544-107	0+10	3.8
2367-121	0+10	3.0		0+20	5.4
	0+20	4.5		0+25	6.2
	0+30	5.5	2527-2529	0+10	3.6
	0+33	5.6		0+20	3.2
2407-117	0+10	3.0	2518-105	0+10	4.2
	0+20	4.9		0+20	5.3
	0+30	5.7		0+30	6.0
	0+32	6.0		0+33	6.2
2471-115	0+10	2.9	2556-101	0+10	3.8
	0+20	4.7		0+20	5.1
	0+30	5.9		0+30	5.9
	0+34	6.1		0+33	6.1
2449-113	0+10	3.1	2615-99	0+10	4.0
	0+20	4.2		0+20	5.2
	0+30	5.9		0+30	4.9
	0+32	6.0		0+34	5.1

PTS	STA	SND
2590-97	0+10	3.8
	0+20	5.3
	0+30	5.8
	0+40	6.3
	0+42	6.5



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2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-48)

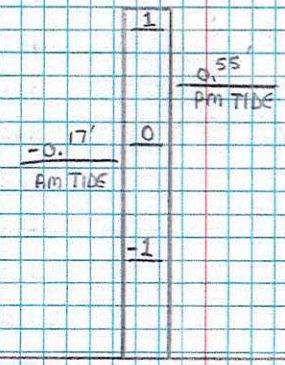
T COON @ 2.25m

PTS	STA	SND	PTS	STA	SND
2626-93	0+10	2.0	2714-83	0+10	3.8
	0+20	2.8		0+20	4.8
	0+30	4.5		0+30	5.3
	0+40	4.9		0+39	5.6
2682-91	0+10	2.0	2798-69	0+10	3.6
	0+20	3.2		0+20	3.8
	0+30	4.3		0+30	5.2
	0+36	4.7		0+32	5.3
2660-89	0+10	2.0	2776-67	0+10	2.8
	0+20	2.8		0+20	3.9
	0+30	4.0		0+30	5.0
	0+40	4.7		0+36	5.4
	0+43	4.9	2775-66	0+10	3.7
2684-2683	0+10	3.2		0+20	3.4
	0+20	3.8		0+30	3.3
	0+30	3.3		0+34	2.9
	0+40	3.3	2769-65	0+10	3.0
2688-85	0+10	4.0		0+20	3.8
	0+20	4.7		0+30	5.7
	0+30	5.3		0+35	5.9
	0+40	5.6			
	0+41	5.6			

J. STEVENS, J DUPRE, A. ANSARDI 2-19-15 37

AM TIDE -0.17'

PM TIDE 0.55'



№. 4380

2015.0072

TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-48)

Δ COON @ 2.25 m

PTS	STA	SNDS	PTS	STA	SNDS
1740-62	0+10	3.1	1691-53	0+10	4.6
	0+20	3.2		0+20	4.6
	0+30	2.6		0+30	5.2
	0+40	1.9		0+39	5.8
	0+44	1.7	1696-51	0+10	4.5
1746-61	0+10	3.7		0+20	4.5
	0+20	4.0		0+30	5.3
	0+30	5.1		0+40	5.7
	0+39	5.5		0+45	6.0
1725-59	0+10	3.7	1455-1704	0+13	3.3
	0+20	3.7		0+20	3.5
	0+30	5.0		0+28	3.2
	0+36	5.3	1669-49	0+15	3.1
1724-57	0+10	3.5		0+20	4.4
	0+20	3.7		0+30	4.8
	0+30	5.1		0+40	6.8
	0+33	5.2		0+50	7.0
1695-54	0+10	3.3			
	0+20	3.3			
	0+30	2.2			
	0+35	1.7			

J. STEVENS, J. DUBRE, A. ANSARDI 2-19-15

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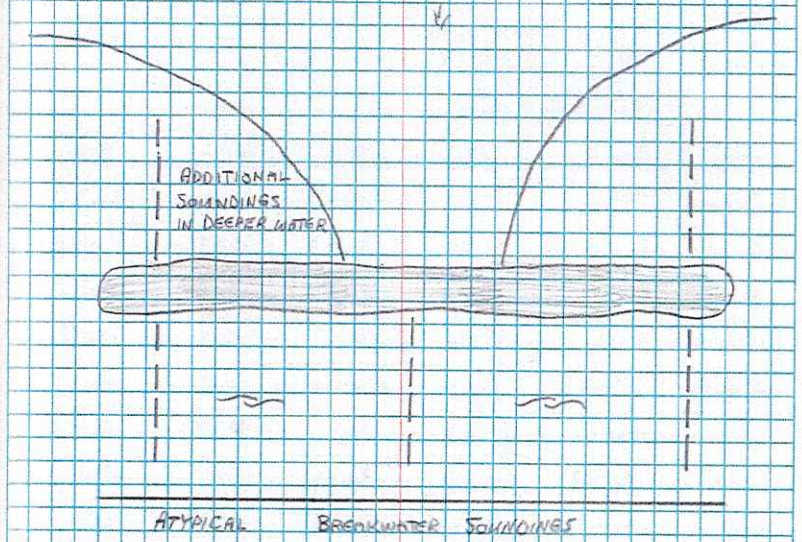

No. 4380

2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-48)

π COON SP83 / LA SOUTH 1702 / GEOID 12A

@ 2.25m

- SETTLEMENT PLATES

PT	DESC	PT	DESC	PT	DESC
12000	BW-15	12015	BW-8	12030	BW-3
12001	BW-15	12016	BW-7	12031	BW-2
12002	BW-14	12017	BW-7	12032	BW-2
12003	BW-14	12018	BW-7	12033	BW-2
12004	BW-13	12019	BW-6	12034	BW-1
12005	BW-13	12020	BW-6	12035	BW-1
12006	BW-12	12021	BW-6	12036	BW-1
12007	BW-12	12022	BW-5	12037	BW-0
12008	BW-11	12023	BW-5	12038	BW-0
12009	BW-11	12024	BW-5	12039	P/BW-0
12010	BW-10	12025	BW-4	12040	PROFILE
12011	BW-10	12026	BW-4	12041	PROFILE
12012	BW-9	12027	BW-4		
12013	BW-9	12028	BW-3		
12014	BW-8	12029	BW-3		

J. STEVENS, A. ANSARAI, C. KNOBLOCK 2-26-15

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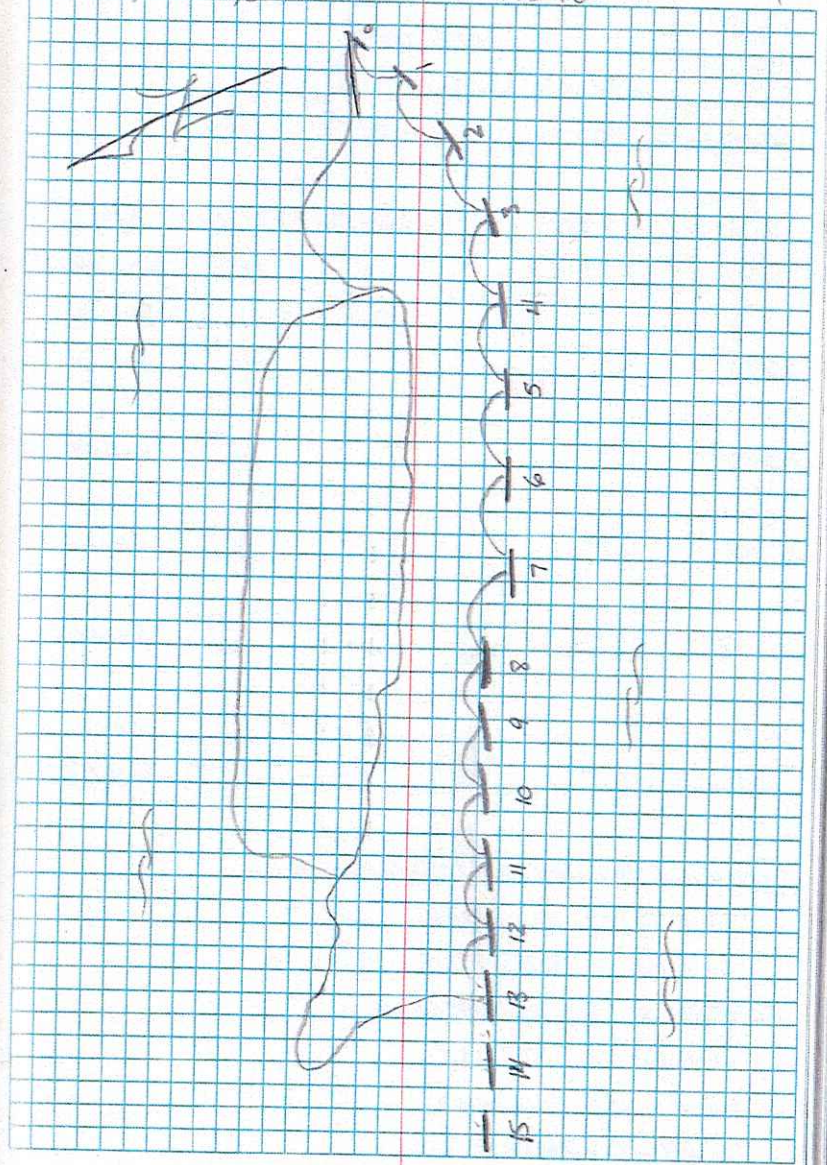


No. 4380

2015-0072

TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TTE-48)

T COON @ 2.25 m

SP83 / LA SOUTH 1702 / GEOID 12A

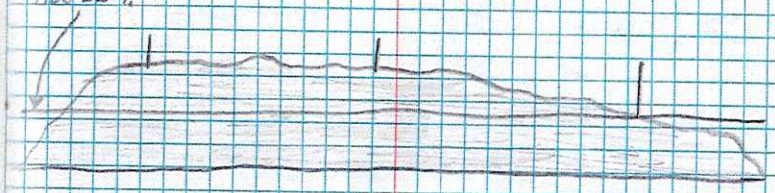
PTS	STA	SND	PTS	STA	SND
2729-81	0+10	5.5		10	0.6
	0+20	5.8		20	(-0.9) ↑
	0+30	6.4		30	0.2
	0+36	6.7		40	-1.1
2732-82	0+10	2.4		1+50	-0.4
	0+20	2.2		60	-0.3
	0+30	3.7		70	-1.3
	0+40	3.5		80	-1.1
	0+49	2.8		90	-0.8
71-72	0+00	5.2		2+00	-0.6
	10	2.7		10	-0.4
	20	(-0.8) ↑		20	0.2
	30	0.3		30	0.3
	40	1.2		40	0.0
	0+50	0.3		2+50	0.9
	60	0.7		60	1.3
	70	0.6		2+70	3.9
	80	1.2		2+74	4.3
	90	0.9			
	1+00	1.4			

J. STEVENS, A. ANSAROI, C. KNOBLOCK 2-26-15

48

PM TIDE 1.005

TIDE EL 1.00'



BW1-4

EAST END SUBMERGED

№. 4380

2015.0072 TETRA-TECH

RACCOON ISLAND BREAKWATER SURVEY (TE-48)

Δ COON @ 2.25 m

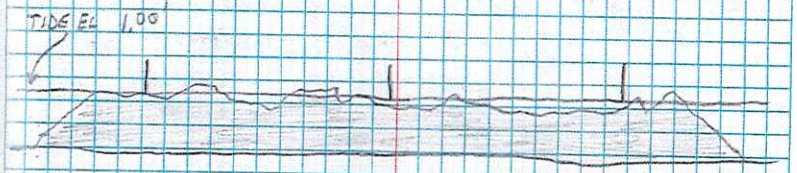
PTS	STA	SND	PTS	STA	SND
T3-74	0+00	5.5	77-78	0+00	5.5
	10	5.7		10	5.8
	20	5.5		20	5.0
	30	2.9		30	3.2
	40	1.0		40	1.1
	50	(-0.3)		50	1.2
	60	2.0		60	1.5
	70	2.6		70	2.1
	80	3.4		80	3.6
	90	3.4		90	3.3
	1+00	3.3		1+00	3.0
75-76	0+00	5.6	1664-44	0+10	3.0
	10	5.8		0+20	3.7
	20	5.5		0+23	4.2
	30	2.8	1658-43	0+10	3.2
	40	1.1		0+20	3.5
	50	0.0		0+30	4.2
	60	0.8		0+34	4.4
	70	2.0	2799-46	0+10	3.1
	80	3.0		0+20	3.7
	90	2.8		0+30	3.9
	1+00	2.8		0+38	4.6

J. STEVENS, A. ANSARD, C. KNOBLOCK 2-26-15

PTS	STA	SND
2806-45	0+10	4.0
	0+20	4.3
	0+26	4.6

NOTES: BREAKWATER SET "3" SUBMERGED BELOW WATER

SOUNDINGS TAKEN AS SAFEST METHOD



№. 4380

2015.0072 TETRA-TECH

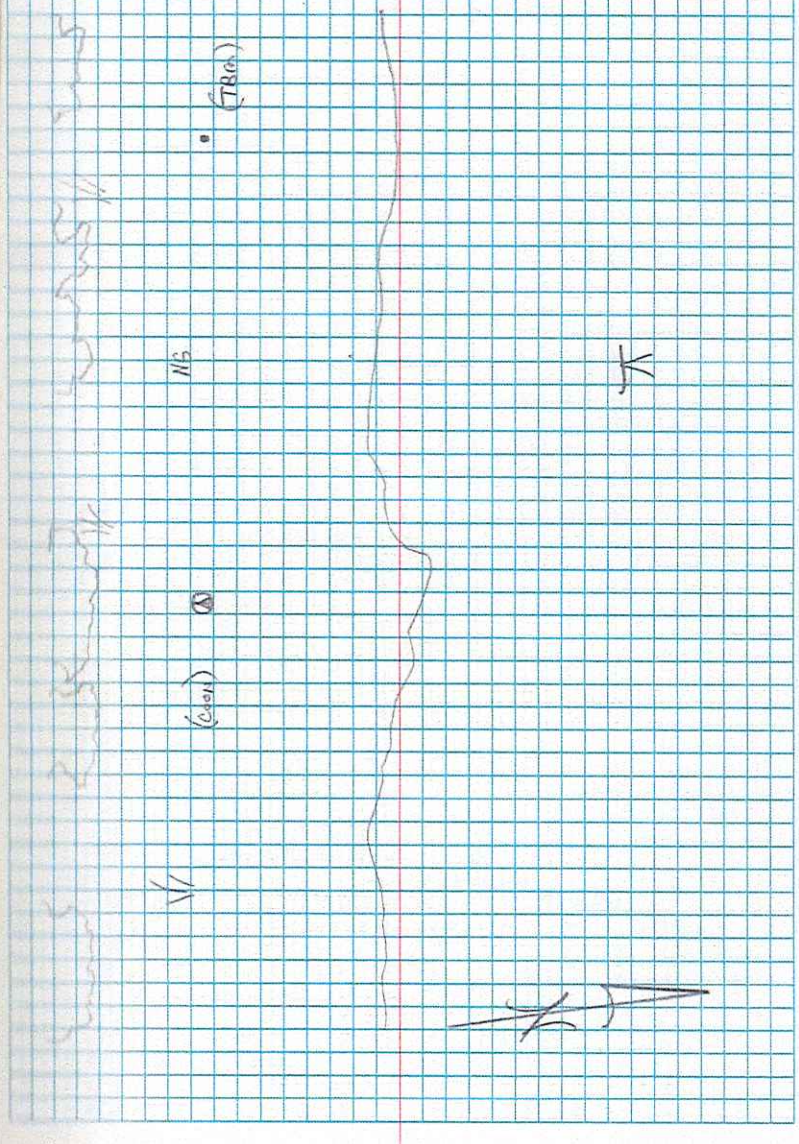
RACCOON ISLAND BW SURVEY

— EXPOSED MONUMENT FOR PICTURES AND LEVEL SURVEY

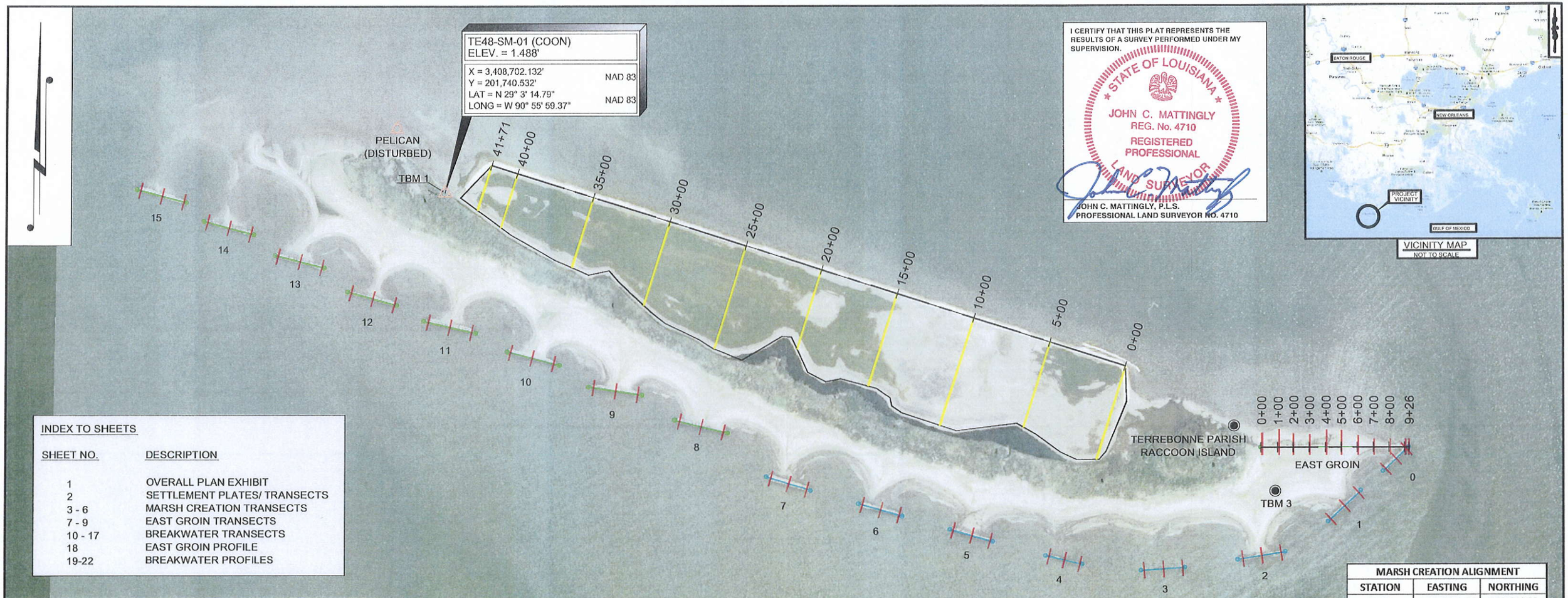
• APPROX 1.5' BELOW NATURAL GROUND

+	HI	-	ELEV	DESC	
4.46			1.488	COON	TG48-SM-01
	5.948				
		3.19	2.758	NG	
		4.31	1.638	TBM	
4.03			1.638	TBM	
	5.668				
		2.90	2.768	NG	
		4.18	1.488	COON	TG48-SM-01

J. STEVENS, F. LITTLE, T. RAMIREZ 3-23-15 7



4520



VICINITY MAP
NOT TO SCALE

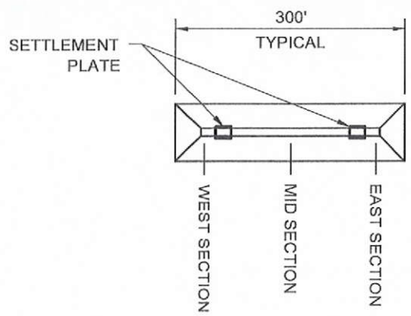
I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	OVERALL PLAN EXHIBIT
2	SETTLEMENT PLATES/ TRANSECTS
3 - 6	MARSH CREATION TRANSECTS
7 - 9	EAST GROIN TRANSECTS
10 - 17	BREAKWATER TRANSECTS
18	EAST GROIN PROFILE
19-22	BREAKWATER PROFILES



TYPICAL BREAKWATER
SCALE: 1"=200'

MARSH CREATION ALIGNMENT		
STATION	EASTING	NORTHING
0+00	3,412,971.99	200,654.88
41+71	3,408,994.42	201,911.79

EAST GROIN ALIGNMENT		
STATION	EASTING	NORTHING
0+00	3,413,824.21	200,146.79
9+26	3,414,749.99	200,146.79

BENCHMARKS				
POINT #	NAME	EASTING	NORTHING	ELEVATION
1000	TE48-SM-01 (COON)	3408702.132	201740.532	1.488
1001	Terrebonne Parish Raccoon Island	3413654.95	200280.37	3.92
1002	TBM1	3408686.56	201752.34	2.70
1003	TBM3	3413913.75	199873.62	4.04

LEGEND

- TE-29 BREAKWATERS (1996)
- TE-48A BREAKWATERS (2005)
- TE-48B MARSH CREATION (2012)
- MARSH CREATION TRANSECTS
- BREAKWATER & EAST GROIN TRANSECTS

SURVEY NOTES:

1. SURVEY PERFORMED FEBRUARY 2015 BY T. BAKER SMITH, L.L.C.
2. ALL HORIZONTAL POSITIONS ARE EXPRESSED IN LOUISIANA STATE PLANE, SOUTH ZONE, NAD83, IN U.S. SURVEY FEET. ELEVATIONS ARE NAVD88 (GEOID12A), IN U.S. SURVEY FEET.
3. THE REFERENCE BENCHMARK FOR THIS SURVEY IS TE48-SM-01 (COON).
4. BACKGROUND IMAGERY REPRODUCED FROM 2013 DOQQ AERIAL PHOTOGRAPHY ACQUIRED FROM THE NAIP.

NOTES:

CPRA

T. BAKER SMITH
SOLUTIONS START HERE
412 South Van Ave., Houma, LA 70363
(985)868-1650 tbsmith.com

SCALE: 1" = 600'
600' 300' 0' 600'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
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DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072

DRAWING NAME: 1-2 OVERALL PLAN EXHIBIT.DWG
PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

SHEET NO: 1 OF 22

OVERALL PLAN EXHIBIT

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\1-2 OVERALL PLAN EXHIBIT.DWG

SETTLEMENT PLATES					
Point #	EASTING	NORTHING	ELEVATION	DESCRIPTION	LOCATION
12000	3406935.26	201745.17	8.28	PIPE	BW 15 WEST
12001	3407026.48	201695.64	8.34	PIPE	BW 15 EAST
12002	3407255.22	201544.78	8.07	PIPE	BW 14 WEST
12003	3407453.07	201492.38	8.05	PIPE	BW 14 EAST
12004	3407696.68	201333.49	7.36	PIPE	BW 13 WEST
12005	3407890.37	201284.70	6.92	PIPE	BW 13 EAST
12006	3408152.91	201101.65	6.87	PIPE	BW 12 WEST
12007	3408345.16	201051.00	8.25	PIPE	BW 12 EAST
12008	3408645.70	200929.41	5.26	PIPE BENT	BW 11 WEST
12009	3408836.27	200877.57	8.53	PIPE	BW 11 EAST
12010	3409154.67	200732.98	7.95	PIPE	BW 10 WEST
12011	3409344.97	200683.18	8.42	PIPE	BW 10 EAST
12012	3409679.50	200517.15	7.82	PIPE	BW 9 WEST
12013	3409872.02	200484.13	8.06	PIPE	BW 9 EAST
12014	3410211.49	200298.62	9.41	PIPE	BW 8 WEST
12015	3410407.43	200252.90	10.08	PIPE	BW 8 EAST
12016	3410757.86	199949.15	6.42	PIPE	BW 7 WEST
12017	3410852.71	199920.46	6.80	PIPE	BW 7 MID
12018	3410949.16	199894.96	7.02	PIPE	BW 7 EAST
12019	3411340.13	199784.37	6.18	PIPE	BW 6 WEST
12020	3411436.62	199756.92	6.45	PIPE	BW 6 MID
12021	3411580.79	199731.31	6.23	PIPE BENT	BW 6 EAST
12022	3411916.23	199621.94	6.37	PIPE	BW 5 WEST
12023	3412013.11	199593.73	7.06	PIPE	BW 5 MID
12024	3412109.00	199565.50	5.70	PIPE	BW 5 EAST
12025	3412504.39	199460.02	3.75	PIPE	BW 4 WEST
12026	3412600.60	199435.89	5.34	PIPE	BW 4 MID
12027	3412698.69	199410.99	3.23	PIPE	BW 4 EAST
12028	3413119.92	199385.42	2.73	PIPE BENT	BW 3 WEST
12029	3413220.20	199379.66	4.06	PIPE	BW 3 MID
12030	3413318.24	199382.30	2.64	PIPE	BW 3 EAST
12031	3413720.09	199450.19	5.17	PIPE	BW 2 WEST
12032	3413816.90	199464.71	5.16	PIPE	BW 2 MID
12033	3413915.75	199480.73	5.33	PIPE	BW 2 EAST
12034	3414270.79	199710.18	4.36	PIPE BENT	BW 1 WEST
12035	3414344.35	199774.60	5.32	PIPE	BW 1 MID
12036	3414418.05	199841.53	5.03	PIPE	BW 1 EAST
12037	3414604.46	200011.68	7.24	PIPE	BW 0 WEST
12038	3414676.48	200078.96	4.65	PIPE	BW 0 MID
12039	3414749.57	200146.72	5.18	PIPE	GROIN/ BW 0 JOINT
12040	3414508.71	200147.06	5.77	PIPE	GROIN EAST
12041	3414125.47	200146.26	6.41	PIPE	GROIN WEST

MARSH CREATION TRANSECT ENDPOINTS			
POINT #	EASTING	NORTHING	DESCRIPTION
1	3,412,971.99	200,654.88	MC 0+00 BEG
2	3,412,788.16	200,073.15	MC 0+00 END
3	3,412,495.23	200,805.54	MC 5+00 BEG
4	3,412,327.42	200,274.51	MC 5+00 END
5	3,412,018.46	200,956.19	MC 10+00 BEG
6	3,411,806.55	200,285.56	MC 10+00 END
7	3,411,541.70	201,106.85	MC 15+00 BEG
8	3,411,359.69	200,530.87	MC 15+00 END
9	3,411,064.94	201,257.51	MC 20+00 BEG
10	3,410,908.60	200,762.77	MC 20+00 END
11	3,410,588.18	201,408.16	MC 25+00 BEG
12	3,410,384.86	200,764.77	MC 25+00 END
13	3,410,111.41	201,558.82	MC 30+00 BEG
14	3,409,946.07	201,035.58	MC 30+00 END
15	3,409,634.65	201,709.48	MC 35+00 BEG
16	3,409,496.52	201,272.33	MC 35+00 END
17	3,409,157.89	201,860.13	MC 40+00 BEG
18	3,409,051.14	201,522.32	MC 40+00 END
19	3,408,994.42	201,911.79	MC 41+87 BEG
20	3,408,905.43	201,630.19	MC 41+87 END

EAST GROIN TRANSECT ENDPOINTS			
POINT #	EASTING	NORTHING	DESCRIPTION
21	3,413,824.21	200,146.79	GROIN PROFILE BEG
22	3,414,749.99	200,146.79	GROIN PROFILE END
23	3,413,824.21	200,236.70	GROIN 0+00 BEG
24	3,413,824.21	200,096.79	GROIN 0+00 END
25	3,413,832.21	200,234.71	GROIN 0+08 BEG
26	3,413,832.21	200,096.79	GROIN 0+08 END
27	3,413,934.21	200,257.92	GROIN 1+10 BEG
28	3,413,934.21	200,096.79	GROIN 1+10 END
29	3,414,024.21	200,228.17	GROIN 2+00 BEG
30	3,414,024.21	200,096.79	GROIN 2+00 END
31	3,414,126.21	200,223.13	GROIN 3+02 BEG
32	3,414,126.21	200,096.79	GROIN 3+02 END
33	3,414,230.21	200,254.10	GROIN 4+06 BEG
34	3,414,230.21	200,096.79	GROIN 4+06 END
35	3,414,324.21	200,249.57	GROIN 5+00 BEG
36	3,414,324.21	200,096.79	GROIN 5+00 END
37	3,414,428.21	200,217.62	GROIN 6+04 BEG
38	3,414,428.21	200,096.79	GROIN 6+04 END
39	3,414,527.21	200,196.79	GROIN 7+03 BEG
40	3,414,527.21	200,096.79	GROIN 7+03 END
41	3,414,632.21	200,196.79	GROIN 8+08 BEG
42	3,414,632.21	200,096.79	GROIN 8+08 END
43	3,414,729.21	200,196.79	GROIN 9+05 BEG
44	3,414,729.21	200,096.79	GROIN 9+05 END
45	3,414,750.21	200,196.79	GROIN 9+26 BEG
46	3,414,750.21	200,096.79	GROIN 9+26 END

TE-29 BREAKWATER TRANSECT ENDPOINTS			
POINT #	EASTING	NORTHING	DESCRIPTION
47	3,414,749.99	200,146.79	BW 0 BEG
48	3,414,589.17	199,995.86	BW 0 END
49	3,414,769.42	200,096.46	BW 0 EAST BEG
50	3,414,700.99	200,169.38	BW 0 EAST END
51	3,414,703.80	200,034.87	BW 0 MID BEG
52	3,414,635.37	200,107.79	BW 0 MID END
53	3,414,638.17	199,973.28	BW 0 WEST BEG
54	3,414,569.74	200,046.20	BW 0 WEST END
55	3,414,447.71	199,874.63	BW 1 BEG
56	3,414,242.33	199,683.07	BW 1 END
57	3,414,466.88	199,824.13	BW 1 EAST BEG
58	3,414,398.67	199,897.26	BW 1 EAST END
59	3,414,379.12	199,742.29	BW 1 MID BEG
60	3,414,310.91	199,815.41	BW 1 MID END
61	3,414,291.36	199,660.44	BW 1 WEST BEG
62	3,414,223.16	199,733.57	BW 1 WEST END
63	3,413,977.36	199,493.32	BW 2 BEG
64	3,413,678.75	199,447.34	BW 2 END
65	3,413,954.26	199,439.18	BW 2 EAST BEG
66	3,413,939.04	199,538.01	BW 2 WEST END
67	3,413,835.66	199,420.91	BW 2 MID BEG
68	3,413,820.44	199,519.75	BW 2 MID END
69	3,413,717.06	199,402.65	BW 2 WEST BEG
70	3,413,701.84	199,501.48	BW 2 WEST END
71	3,413,349.57	199,398.32	BW 3 BEG
72	3,413,076.41	199,379.73	BW 3 END
73	3,413,336.11	199,347.28	BW 3 EAST BEG
74	3,413,329.32	199,447.05	BW 3 EAST END
75	3,413,216.38	199,339.14	BW 3 MID BEG
76	3,413,209.59	199,438.91	BW 3 MID END
77	3,413,096.66	199,330.99	BW 3 WEST BEG
78	3,413,089.87	199,430.76	BW 3 WEST END
79	3,412,702.08	199,418.03	BW 4 BEG
80	3,412,471.02	199,472.82	BW 4 END
81	3,412,672.32	199,373.70	BW 4 EAST BEG
82	3,412,695.39	199,471.00	BW 4 EAST END
83	3,412,575.01	199,396.77	BW 4 MID BEG
84	3,412,598.09	199,494.08	BW 4 MID END
85	3,412,477.71	199,419.85	BW 4 WEST BEG
86	3,412,500.78	199,517.15	BW 4 WEST END
87	3,412,139.76	199,561.10	BW 5 BEG
88	3,411,871.50	199,635.46	BW 5 END
89	3,412,107.92	199,518.04	BW 5 EAST BEG
90	3,412,134.63	199,614.41	BW 5 EAST END
91	3,411,992.28	199,550.10	BW 5 MID BEG
92	3,412,018.99	199,646.46	BW 5 MID END
93	3,411,876.64	199,582.15	BW 5 WEST BEG
94	3,411,903.35	199,678.52	BW 5 WEST END
95	3,411,576.51	199,719.78	BW 6 BEG
96	3,411,299.44	199,797.07	BW 6 END
97	3,411,540.13	199,678.02	BW 6 EAST BEG
98	3,411,567.00	199,774.34	BW 6 EAST END
99	3,411,424.54	199,710.26	BW 6 MID BEG
100	3,411,451.41	199,806.58	BW 6 MID END
101	3,411,308.96	199,742.50	BW 6 WEST BEG
102	3,411,335.83	199,838.83	BW 6 WEST END
103	3,410,997.46	199,879.57	BW 7 BEG
104	3,410,713.53	199,965.66	BW 7 END
105	3,410,955.82	199,839.94	BW 7 EAST BEG
106	3,410,984.84	199,935.64	BW 7 EAST END
107	3,410,840.99	199,874.77	BW 7 MID BEG
108	3,410,870.00	199,970.46	BW 7 MID END
109	3,410,726.15	199,909.59	BW 7 WEST BEG
110	3,410,755.17	200,005.29	BW 7 WEST END

TE-48A BREAKWATER TRANSECT ENDPOINTS			
POINT #	EASTING	NORTHING	DESCRIPTION
111	3,410,470.21	200,237.75	BW 8 BEG
112	3,410,140.38	200,318.65	BW 8 END
113	3,410,429.35	200,196.29	BW 8 EAST BEG
114	3,410,453.17	200,293.41	BW 8 EAST END
115	3,410,293.38	200,229.64	BW 8 MID BEG
116	3,410,317.20	200,326.76	BW 8 MID END
117	3,410,157.41	200,262.99	BW 8 WEST BEG
118	3,410,181.23	200,360.11	BW 8 WEST END
119	3,409,936.77	200,475.42	BW 9 BEG
120	3,409,605.62	200,527.35	BW 9 END
121	3,409,901.76	200,430.30	BW 9 EAST BEG
122	3,409,917.25	200,529.09	BW 9 EAST END
123	3,409,763.45	200,451.99	BW 9 MID BEG
124	3,409,778.94	200,550.78	BW 9 MID END
125	3,409,625.14	200,473.68	BW 9 WEST BEG
126	3,409,640.63	200,572.47	BW 9 WEST END
127	3,409,420.55	200,662.20	BW 10 BEG
128	3,409,094.48	200,747.22	BW 10 END
129	3,409,369.61	200,623.81	BW 10 EAST BEG
130	3,409,394.84	200,720.58	BW 10 EAST END
131	3,409,234.14	200,659.13	BW 10 MID BEG
132	3,409,259.37	200,755.90	BW 10 MID END
133	3,409,098.67	200,694.46	BW 10 WEST BEG
134	3,409,123.90	200,791.22	BW 10 WEST END
135	3,408,895.42	200,862.33	BW 11 BEG
136	3,408,569.38	200,938.73	BW 11 END
137	3,408,857.30	200,819.91	BW 11 EAST BEG
138	3,408,880.12	200,917.27	BW 11 EAST END
139	3,408,720.99	200,851.85	BW 11 MID BEG
140	3,408,743.81	200,949.21	BW 11 MID END
141	3,408,584.68	200,883.79	BW 11 WEST BEG
142	3,408,607.50	200,981.15	BW 11 WEST END
143	3,408,398.87	201,036.47	BW 12 BEG
144	3,408,093.07	201,120.59	BW 12 END
145	3,408,367.69	200,993.19	BW 12 EAST END
146	3,408,394.22	201,089.61	BW 12 EAST END
147	3,408,232.71	201,030.32	BW 12 MID BEG
148	3,408,259.23	201,126.74	BW 12 MID END
149	3,408,097.72	201,067.45	BW 12 WEST BEG
150	3,408,124.25	201,163.87	BW 12 WEST END
151	3,407,945.45	201,270.90	BW 13 BEG
152	3,407,640.49	201,348.79	BW 13 END
153	3,407,916.24	201,226.75	BW 13 EAST BEG
154	3,407,940.99	201,323.64	BW 13 EAST END
155	3,407,780.60	201,261.40	BW 13 MID BEG
156	3,407,805.34	201,358.29	BW 13 MID END
157	3,407,644.95	201,296.05	BW 13 WEST BEG
158	3,407,669.70	201,392.94	BW 13 WEST END
159	3,407,502.85	201,477.36	BW 14 BEG
160	3,407,191.95	201,562.75	BW 14 END
161	3,407,469.16	201,434.76	BW 14 EAST BEG
162	3,407,495.64	201,531.19	BW 14 EAST END
163	3,407,334.16	201,471.84	BW 14 MID BEG
164	3,407,360.64	201,568.27	BW 14 MID END
165	3,407,199.16	201,508.92	BW 14 WEST BEG
166	3,407,225.64	201,605.35	BW 14 WEST END
167	3,407,081.54	201,679.28	BW 15 BEG
168	3,406,772.36	201,761.00	BW 15 END
169	3,407,049.53	201,636.02	BW 15 EAST BEG
170	3,407,075.08	201,732.70	BW 15 EAST END
171	3,406,914.17	201,671.80	BW 15 MID BEG
172	3,406,939.73	201,768.48	BW 15 MID END
173	3,406,778.82	201,707.58	BW 15 WEST BEG
174	3,406,804.37	201,804.26	BW 15 WEST END

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

T. BAKER SMITH
SOLUTIONS START HERE
412 South Van Ave, Houma, LA 70363
(985)868-1050 - tbsmith.com

REV. NO: 00 | REV. DATE: --/--/-- | REV. BY: ---

REVISION DESCRIPTION:
--

DRAWN BY: JMC | APPROVED BY: JCM
DATE: 5/5/2015 | JOB NO: 2015.0072
DRAWING NAME: 1-2 OVERALL PLAN EXHIBIT.DWG
PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET
SHEET NO: 2 OF 22

SETTLEMENT PLATES/ TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\1-2 OVERALL PLAN EXHIBIT.DWG

NOTE: ALL PROFILES
SHOWN LOOKING WEST

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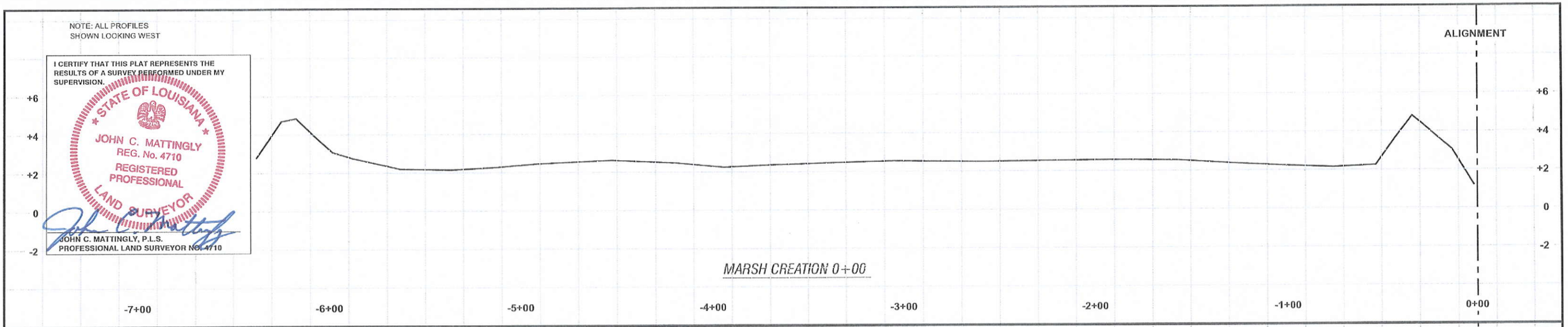
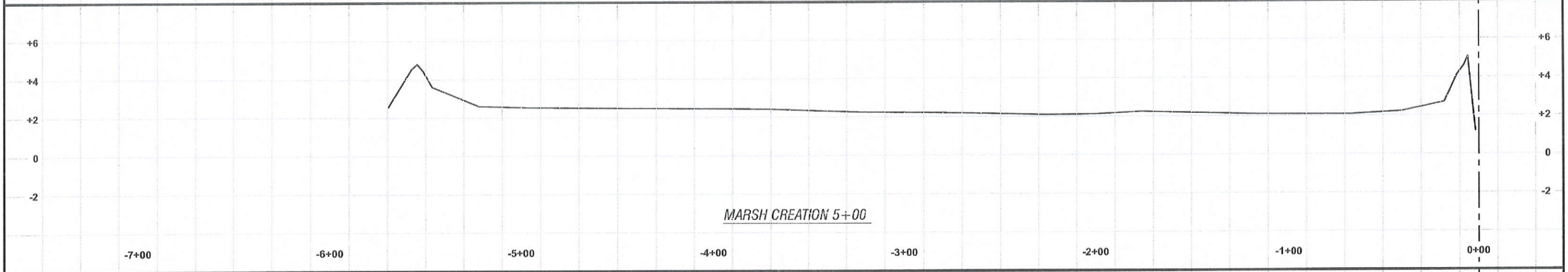
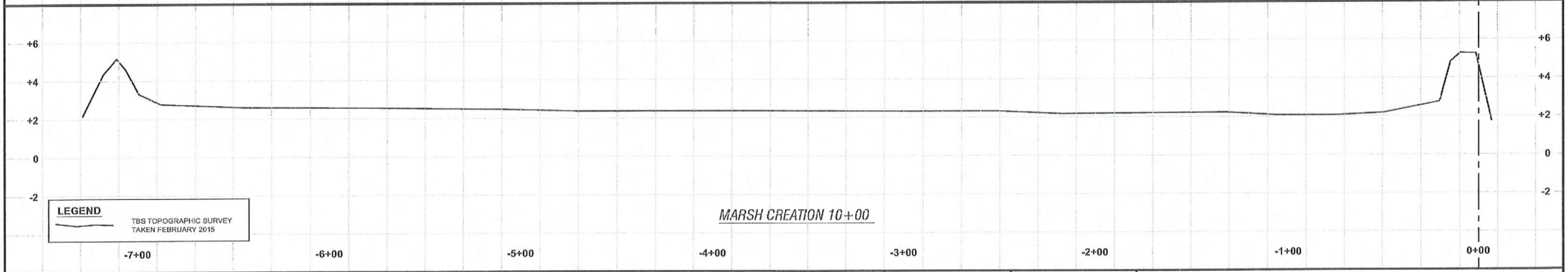
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710







NOTES:

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SOLUTIONS START HERE
412 South Van Ave, Houma, LA 70363
(985)868-1080 tbsmith.com

HORIZONTAL SCALE: 1" = 50'
50' 25' 0' 50'
VERTICAL SCALE: 1" = 5'
5' 2.5' 0' 5'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
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DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	3-6 MC TRANSECTS.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	3 OF 22		

MARSH CREATION TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\3-6 MC TRANSECTS.DWG

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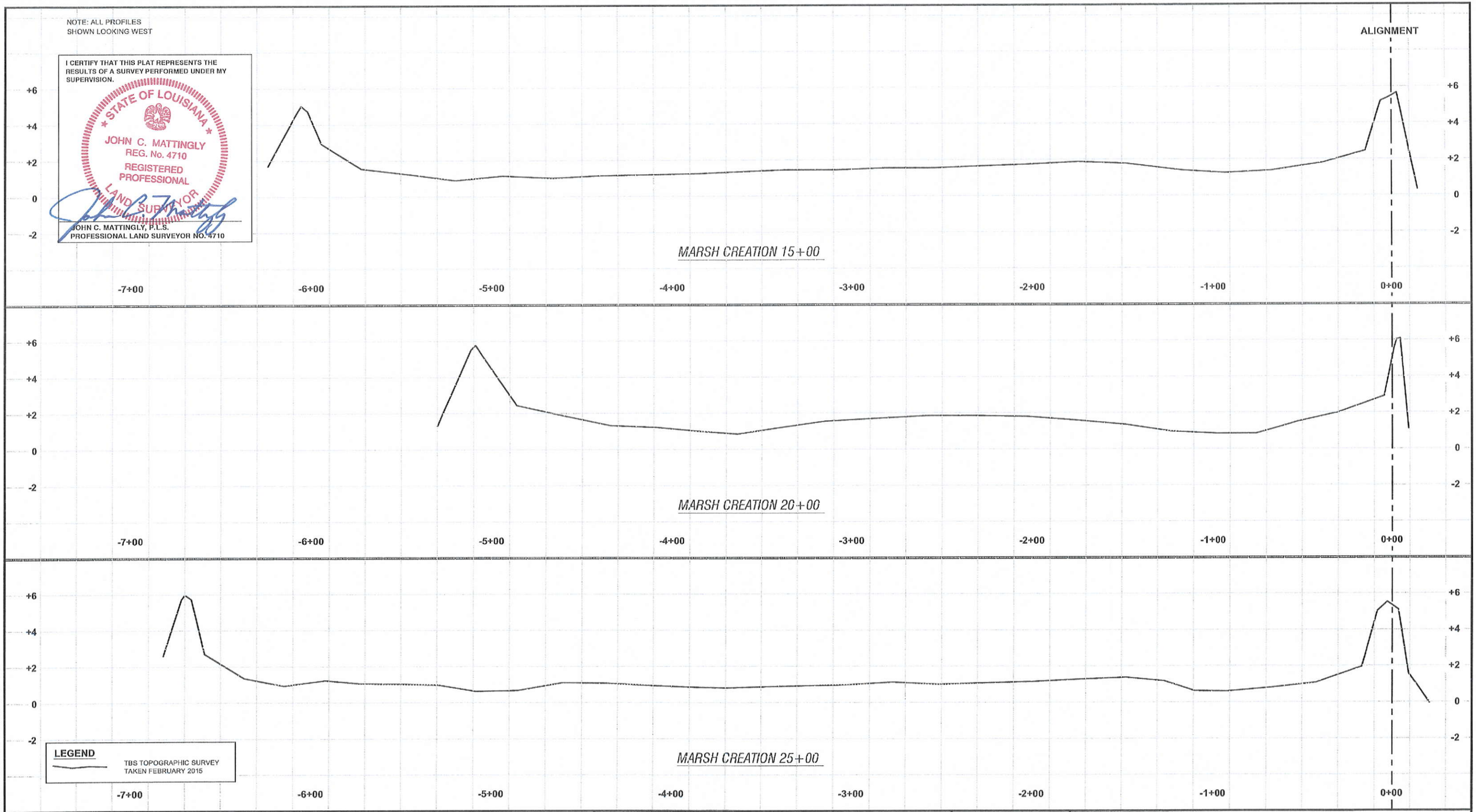
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710



NOTES:

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REVISION DESCRIPTION:
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DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	3-6 MC TRANSECTS.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	4	OF	22

MARSH CREATION TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\3-6 MC TRANSECTS.DWG

NOTE: ALL PROFILES
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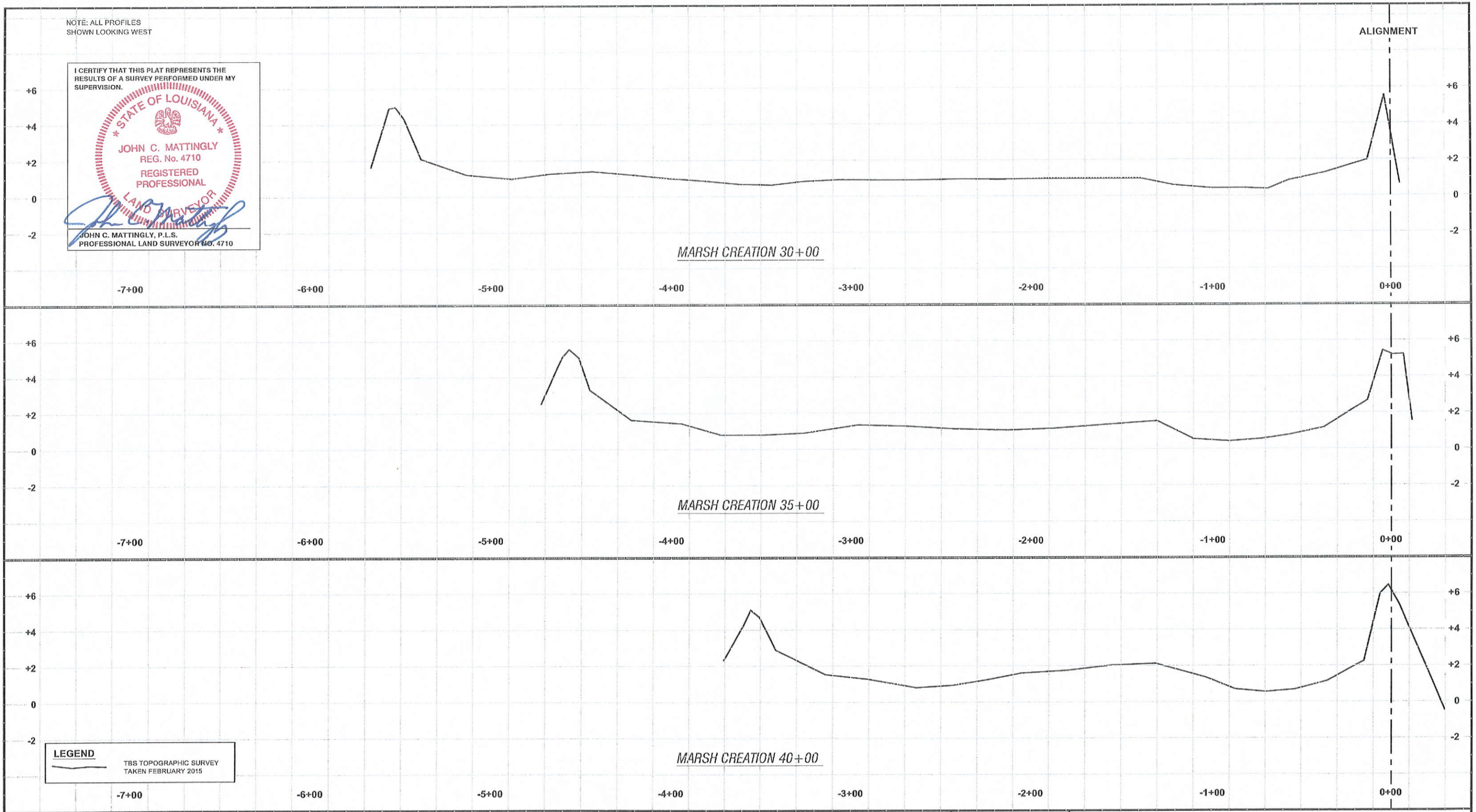
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710



NOTES:

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REVISION DESCRIPTION:
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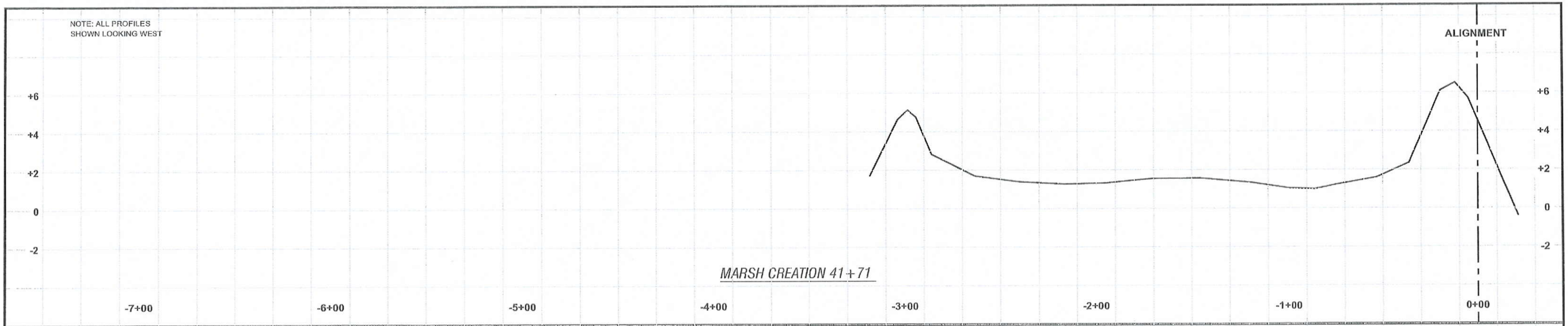
DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	3-6 MC TRANSECTS.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	5	OF	22

MARSH CREATION TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\3-6 MC TRANSECTS.DWG



LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

5/5/2015 - P:\Y-2015\2015.0072\DWG\3-6 MC TRANSECTS.DWG

NOTES:

CPRA

TBS T. BAKER SMITH

HORIZONTAL SCALE: 1" = 50'
50' 25' 0' 50'
VERTICAL SCALE: 1" = 5'
5' 2.5' 0' 5'

REV. NO:	00	REV. DATE:	--/--/--	REV. BY:	---

REVISION DESCRIPTION:
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DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	3-6 MC TRANSECTS.DWG		

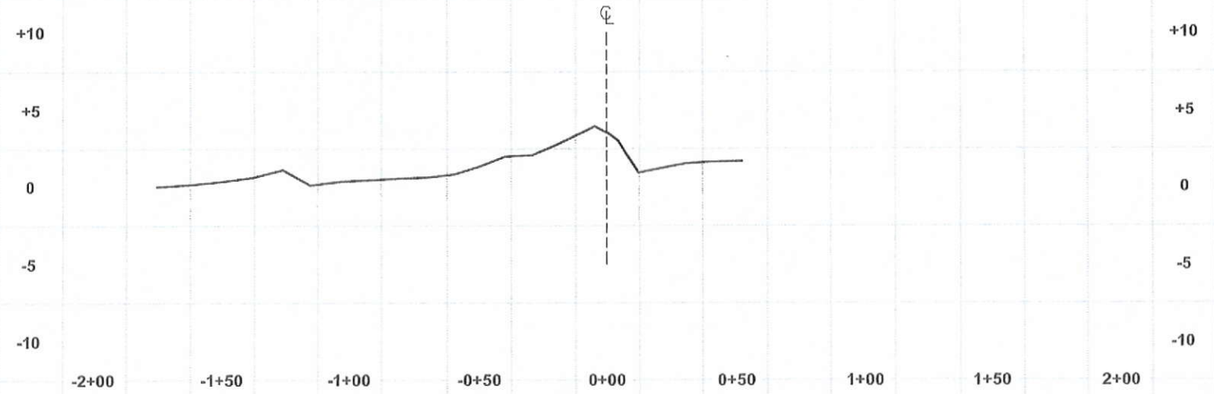
PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

SHEET NO: 6 OF 22

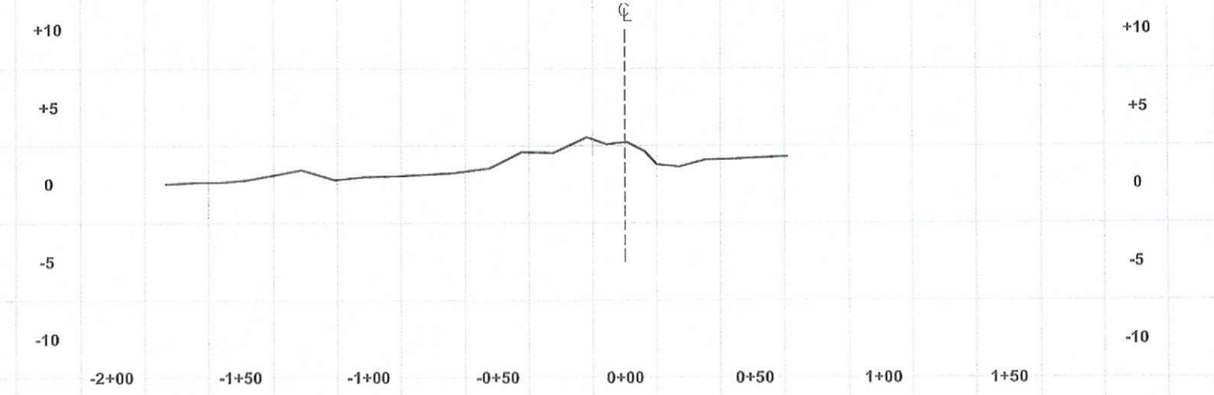
MARSH CREATION TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

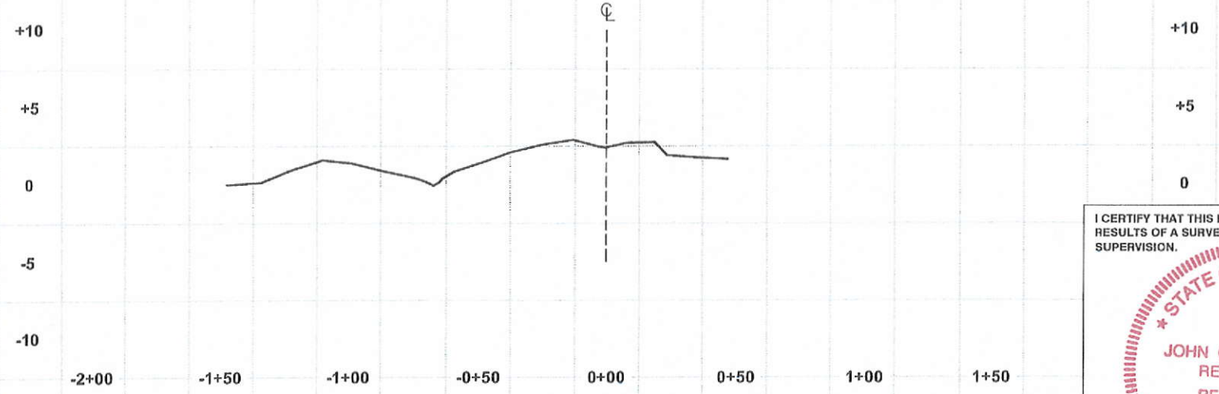
NOTE: ALL PROFILES
SHOWN LOOKING EAST



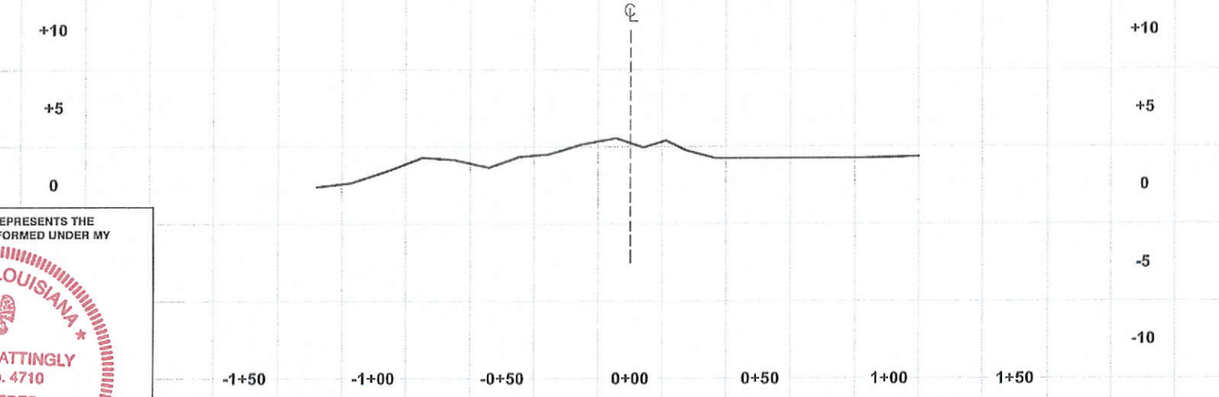
EAST GROIN SECTION
STA 0+00



EAST GROIN SECTION
STA 0+08



EAST GROIN SECTION
STA 1+00



EAST GROIN SECTION
STA 2+00

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

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SOLUTIONS START HERE
412 South Van Ave, Houma, LA 70363
(985)868-1080 tbsmith.com

HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

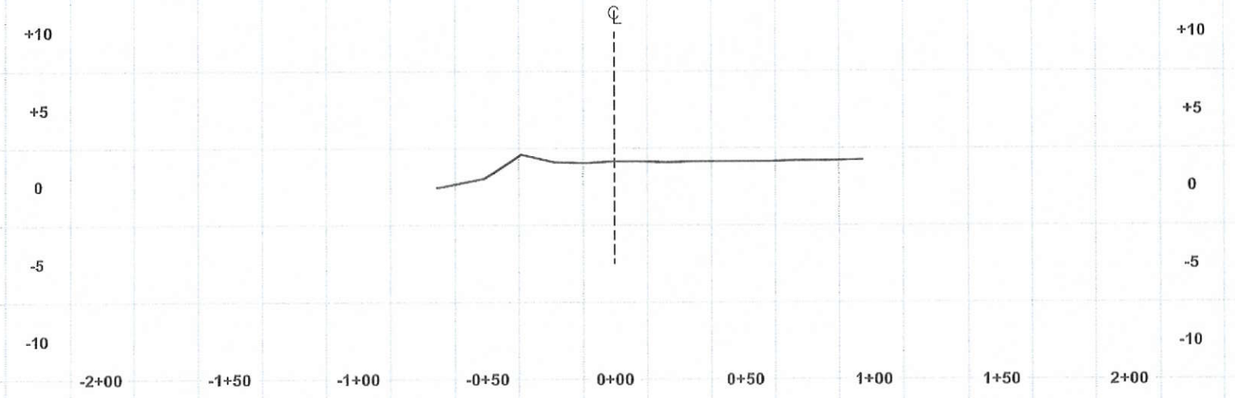
DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	7	OF	22

EAST GROIN TRANSECTS

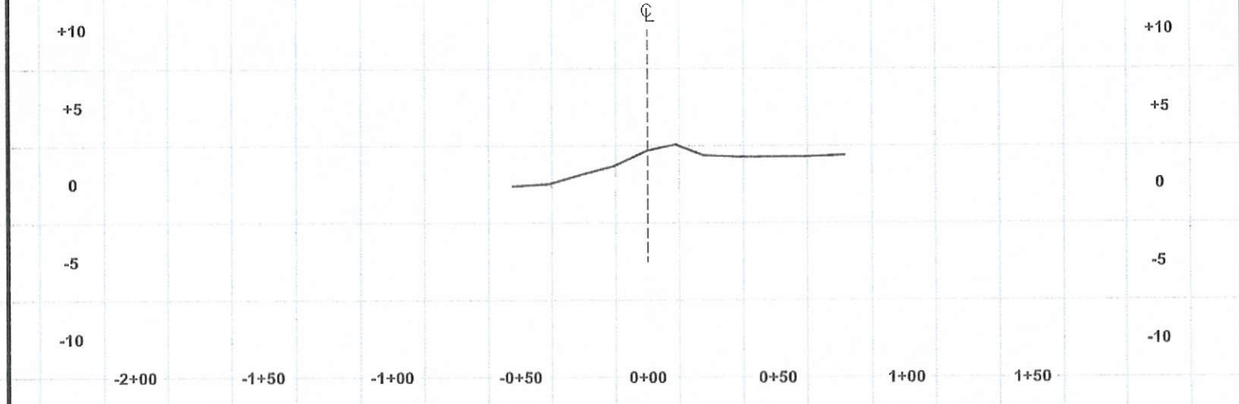
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

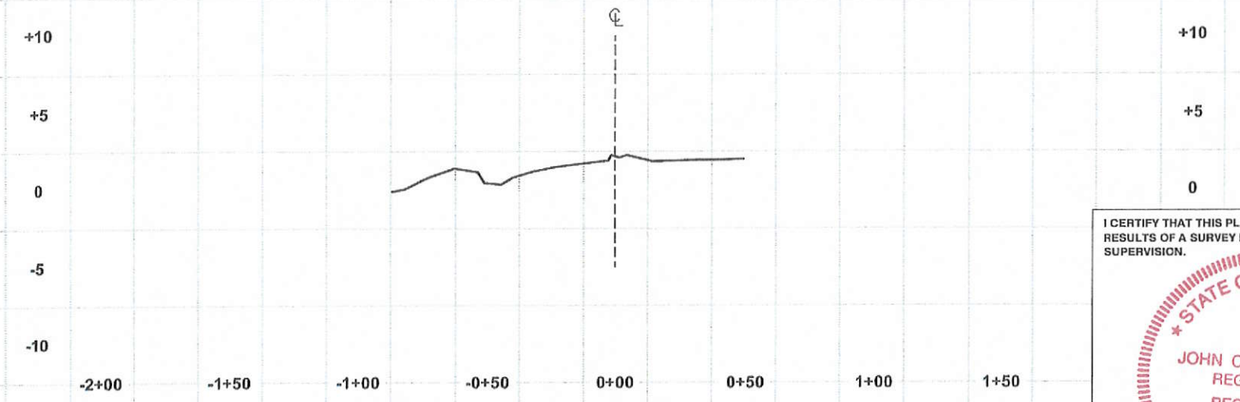
NOTE: ALL PROFILES
SHOWN LOOKING EAST



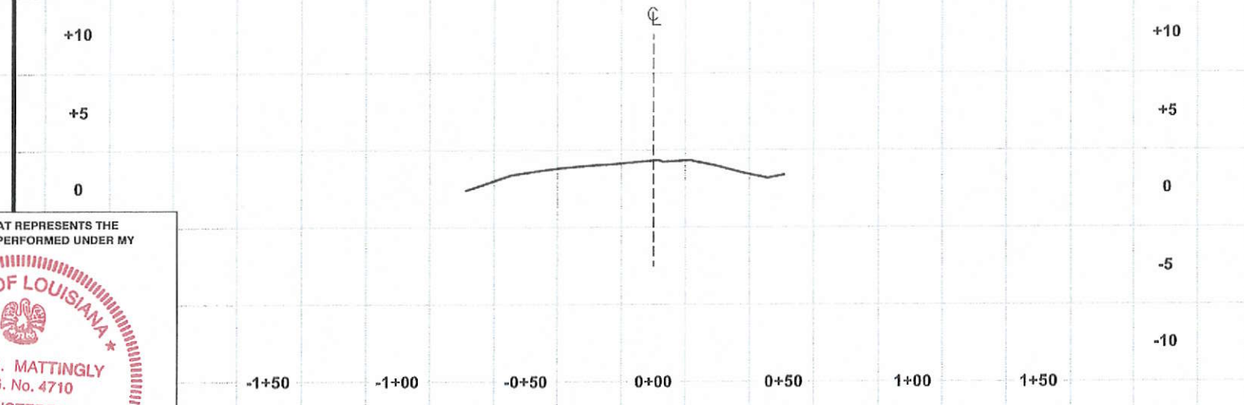
EAST GROIN SECTION
STA 3+00



EAST GROIN SECTION
STA 4+00



EAST GROIN SECTION
STA 5+00



EAST GROIN SECTION
STA 6+00

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

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REGISTERED PROFESSIONAL LAND SURVEYOR

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PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

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HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
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REV. NO:	REV. DATE:	REV. BY:
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REVISION DESCRIPTION:
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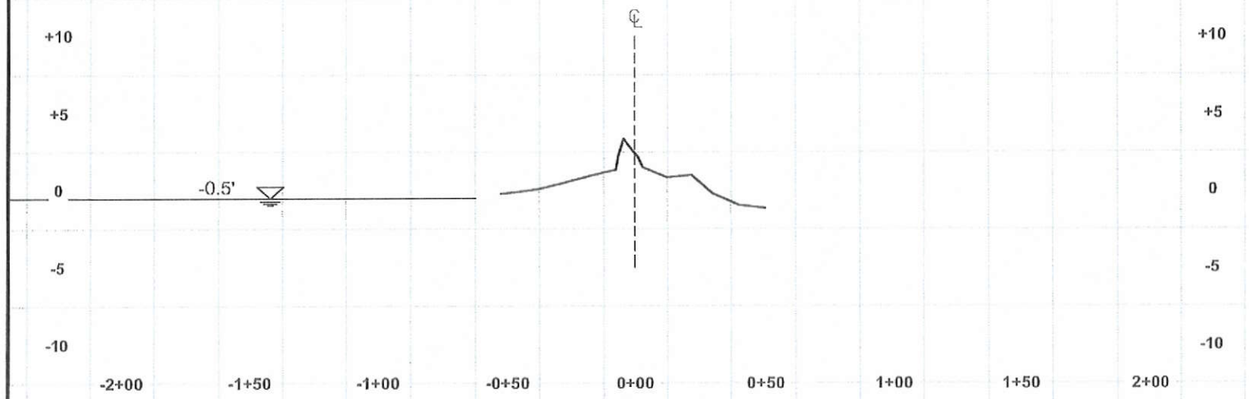
DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	8	OF	22

EAST GROIN TRANSECTS

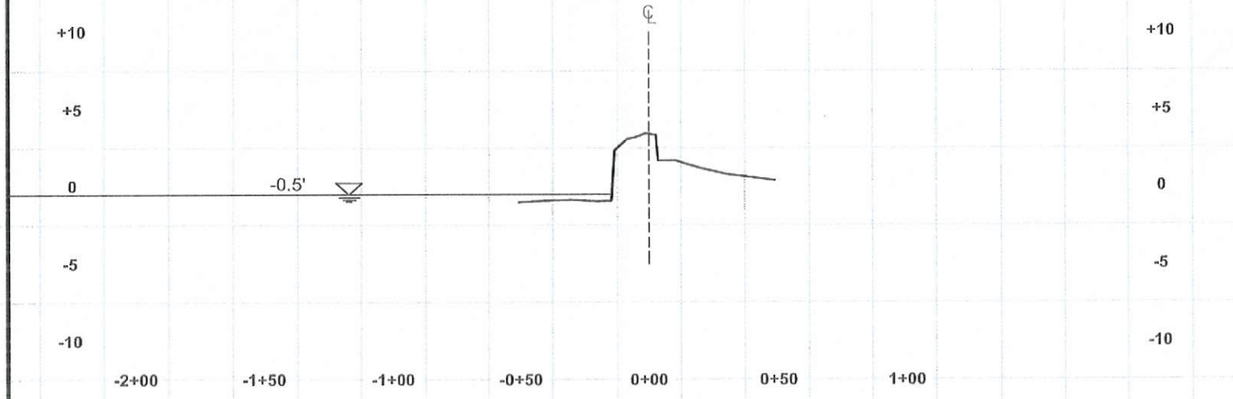
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

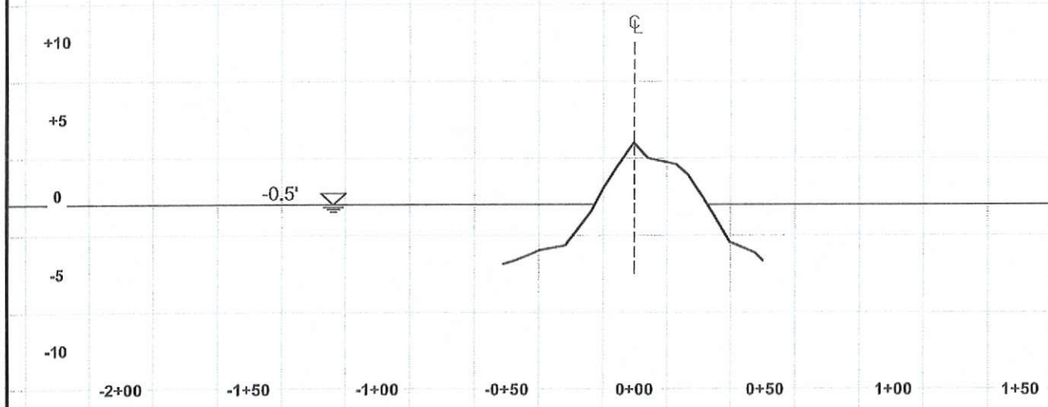
NOTE: ALL PROFILES
SHOWN LOOKING EAST



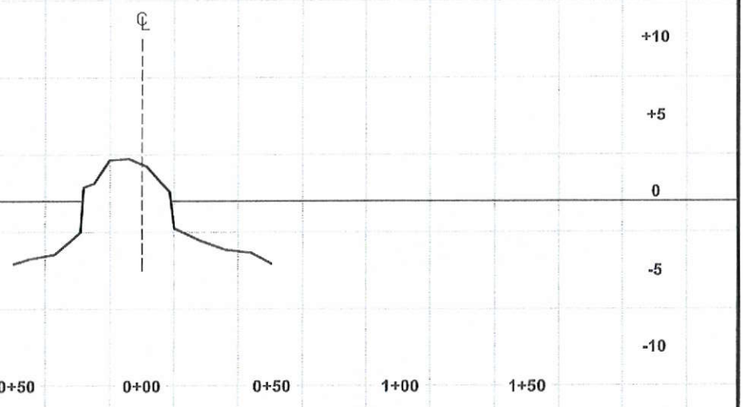
EAST GROIN SECTION
STA 7+00



EAST GROIN SECTION
STA 8+00



EAST GROIN SECTION
STA 9+00



EAST GROIN SECTION
STA 9+26

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

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REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

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SOLUTIONS START HERE

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REV. NO:	REV. DATE:	REV. BY:
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REVISION DESCRIPTION:
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DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
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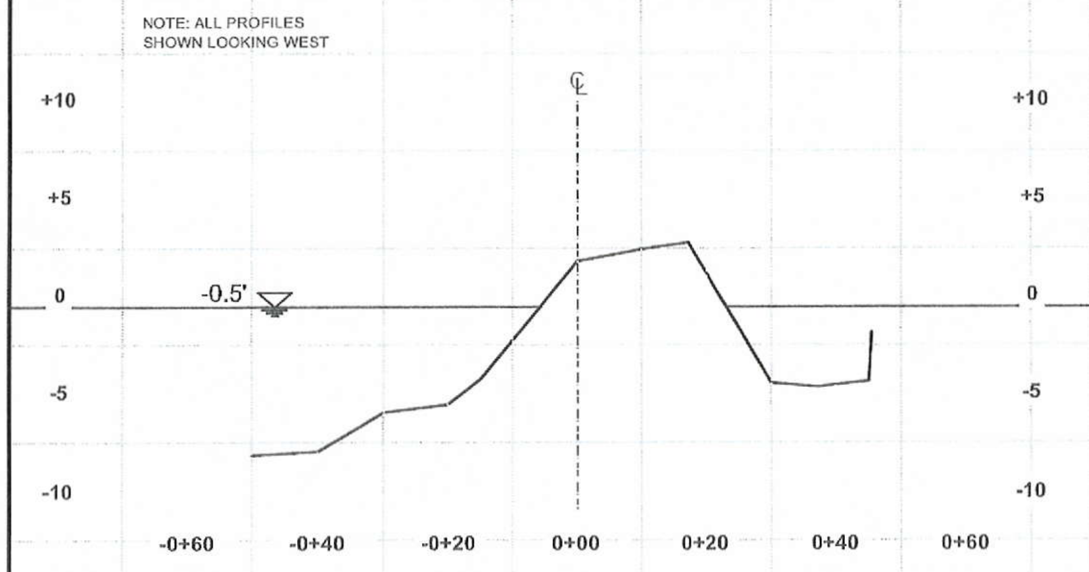
PROJECTION:	LA83-SF-MOD		
GEO. DATUM:	NAD83 | VERT. DATUM: NAVD88		
GRID UNITS:	US SURVEY FEET		
SHEET NO:	9	OF	22

EAST GROIN TRANSECTS

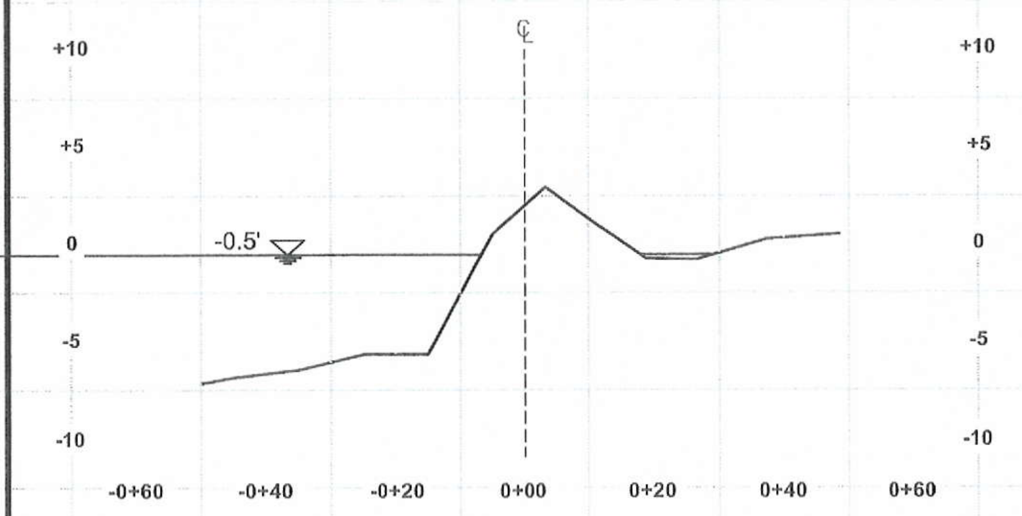
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

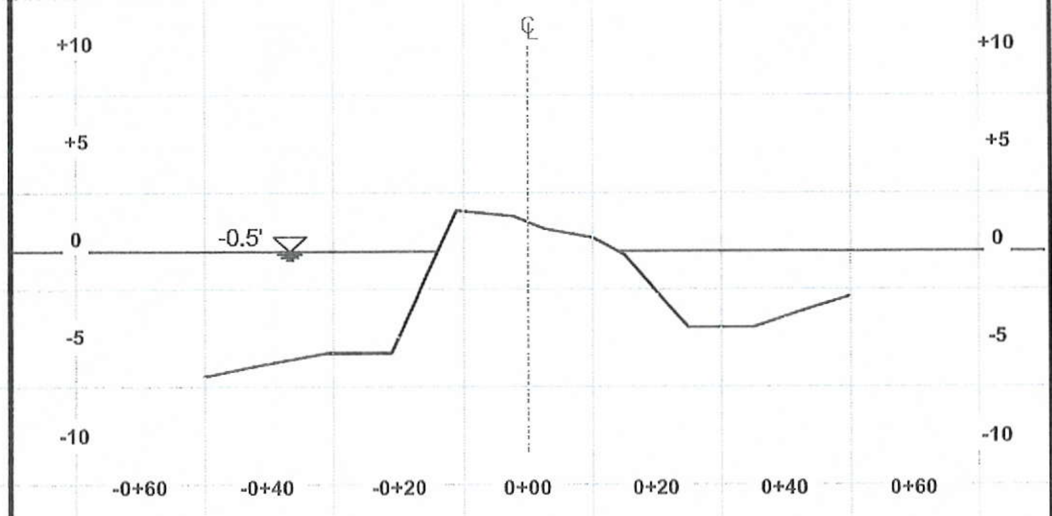
NOTE: ALL PROFILES SHOWN LOOKING WEST



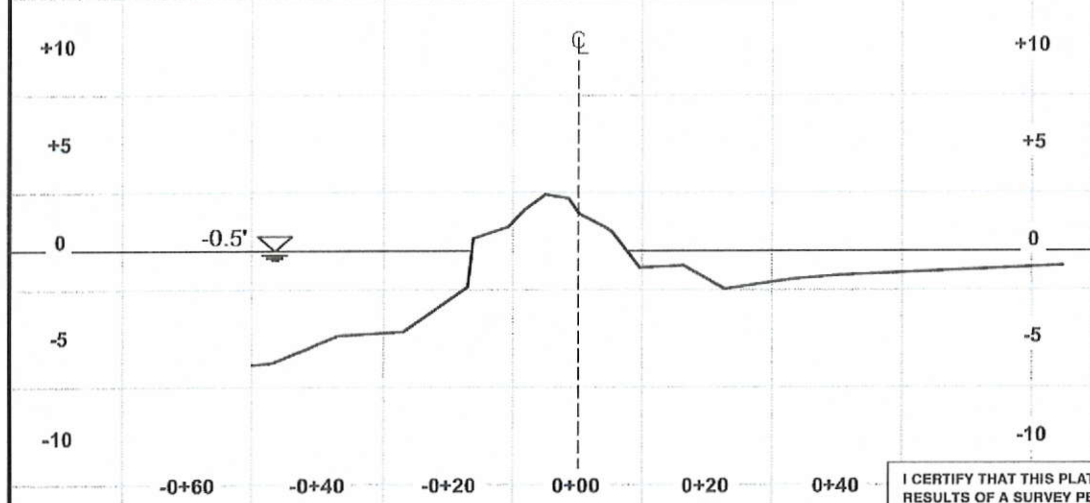
BREAKWATER #0 EAST SECTION



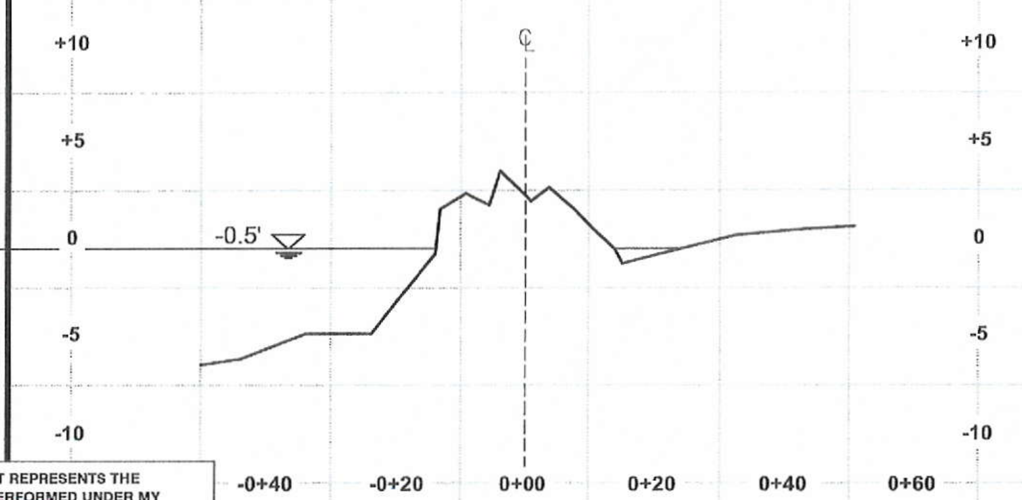
BREAKWATER #0 MID SECTION



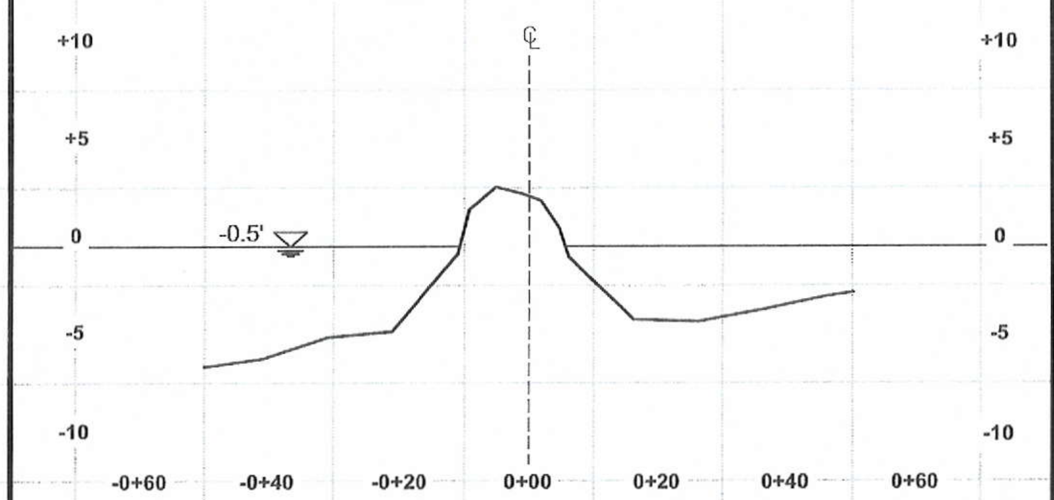
BREAKWATER #0 WEST SECTION



BREAKWATER #1 EAST SECTION



BREAKWATER #1 MID SECTION



BREAKWATER #1 WEST SECTION

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

LEGEND

- TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015
- OBSERVED WATER SURFACE ELEVATION -0.5'

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	00	REV. DATE:	-/-/-	REV. BY:	---

REVISION DESCRIPTION:
--

DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		

PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

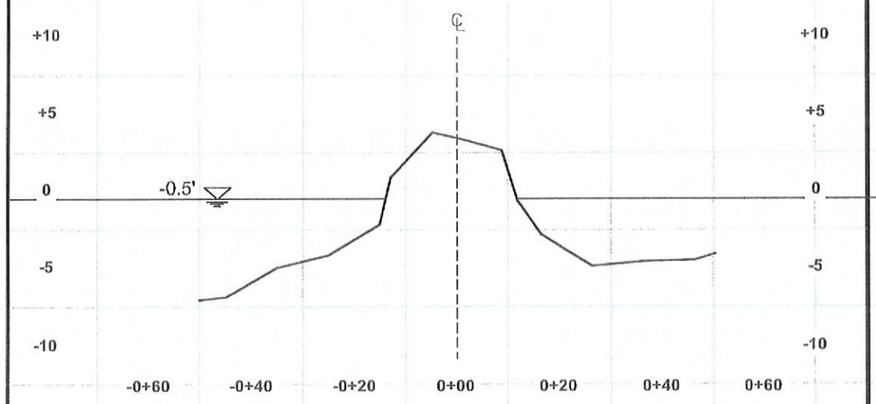
SHEET NO: 10 OF 22

BREAKWATER TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

NOTE: ALL PROFILES
SHOWN LOOKING WEST



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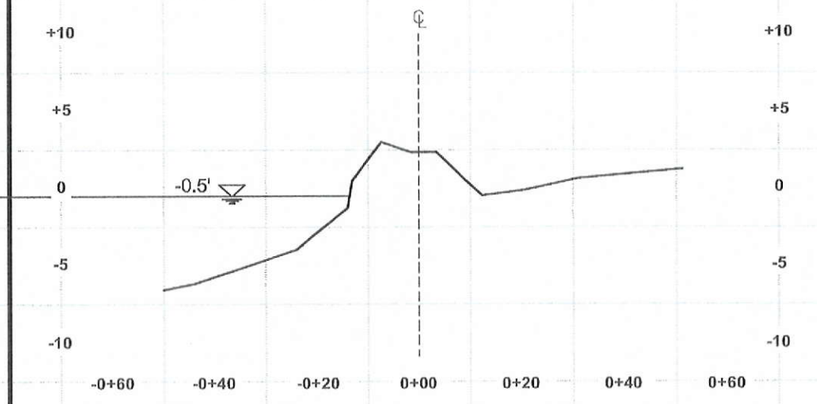
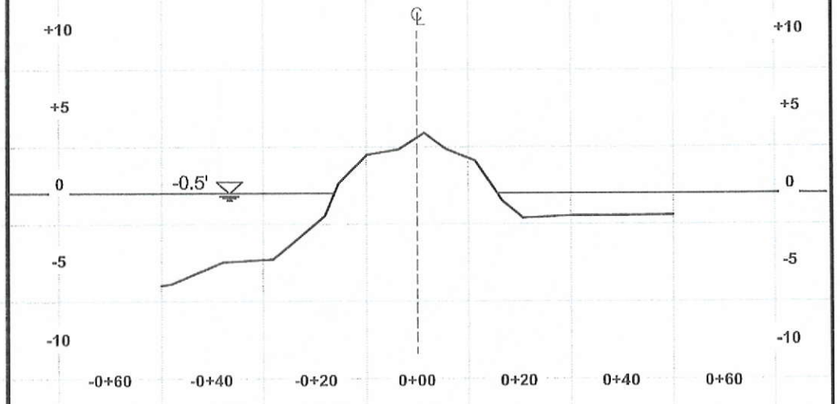
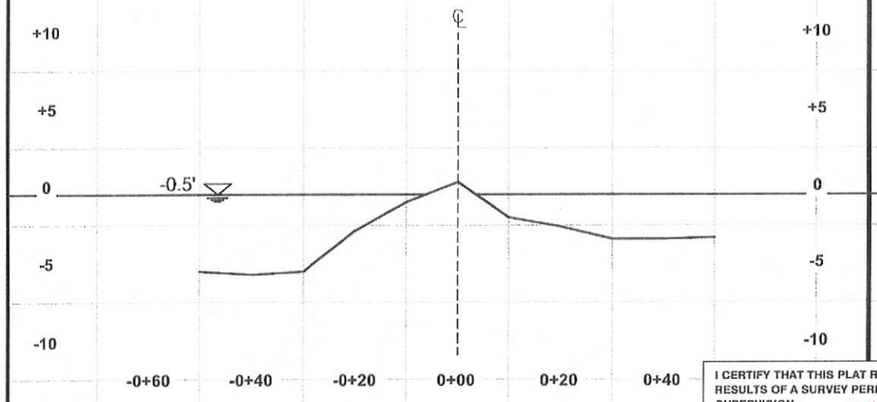


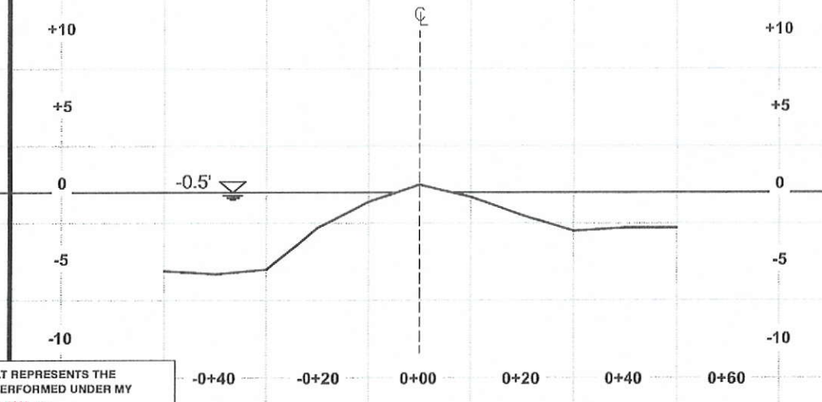
BREAKWATER #2 MID SECTION



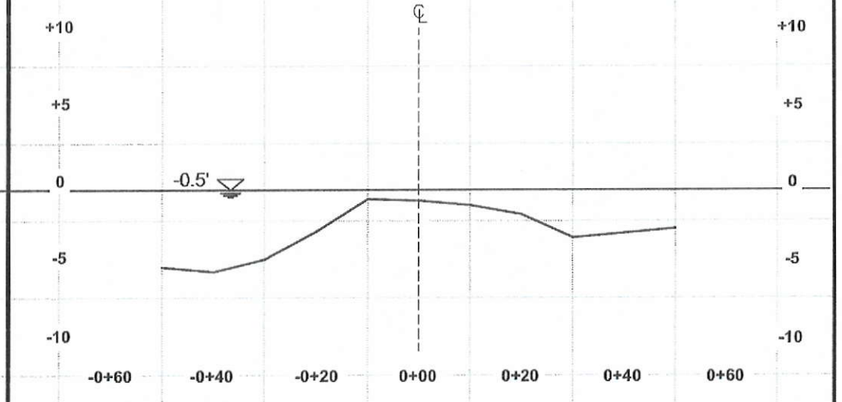
BREAKWATER #2 WEST SECTION



BREAKWATER #3 EAST SECTION



BREAKWATER #3 MID SECTION



BREAKWATER #3 WEST SECTION

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS **T. BAKER SMITH**
SOLUTIONS START HERE

[redacted]

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

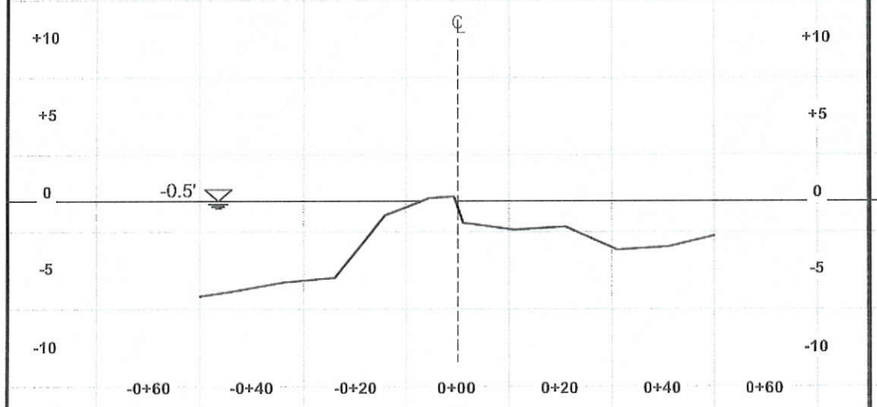
DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		
PROJECTION: LA83-SF-MOD			
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88			
GRID UNITS: US SURVEY FEET			
SHEET NO:	11 OF 22		

BREAKWATER TRANSECTS

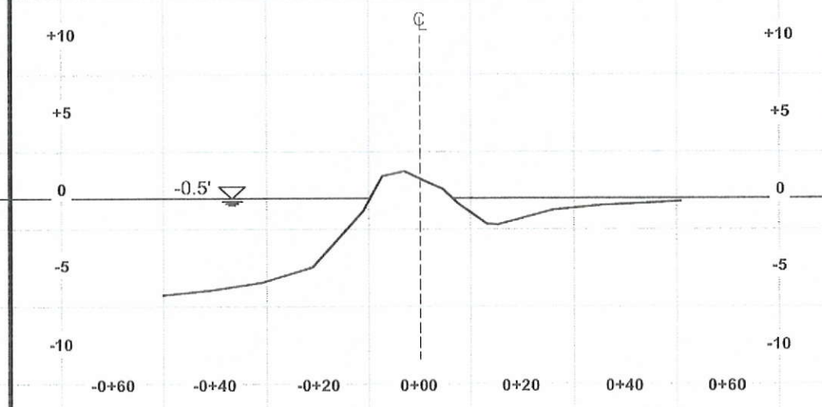
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

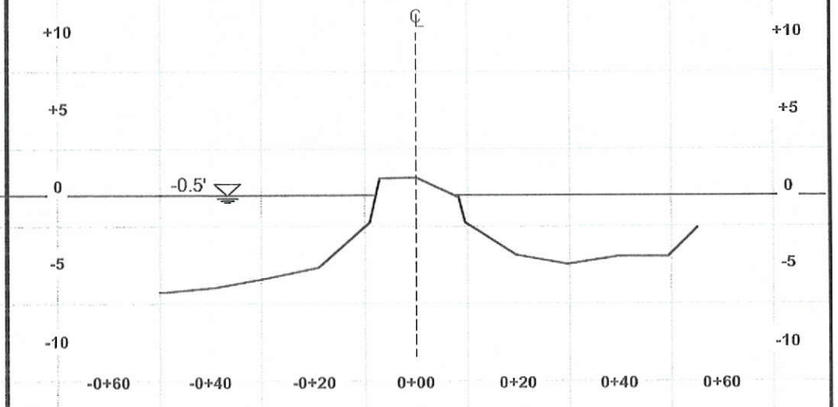
NOTE: ALL PROFILES SHOWN LOOKING WEST



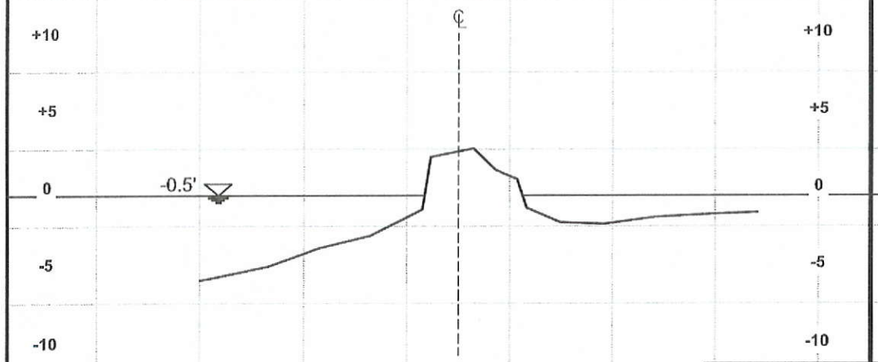
BREAKWATER #4 EAST SECTION



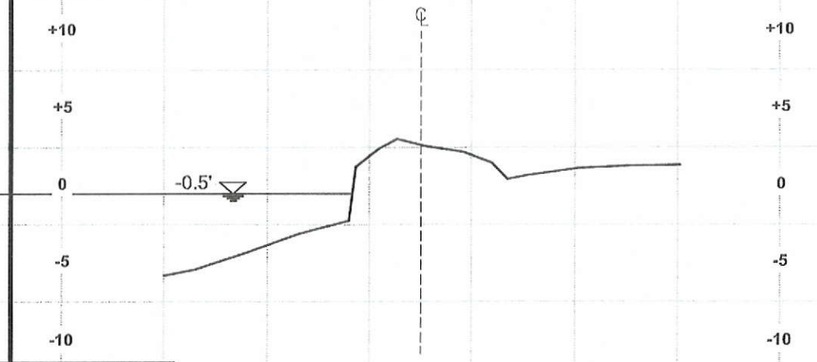
BREAKWATER #4 MID SECTION



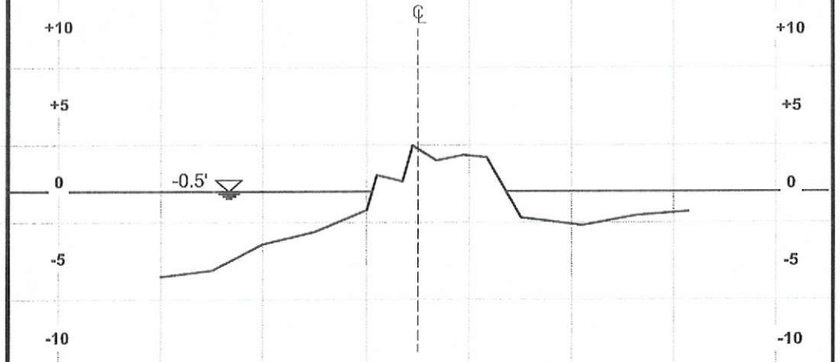
BREAKWATER #4 WEST SECTION



BREAKWATER #5 EAST SECTION



BREAKWATER #5 MID SECTION



BREAKWATER #5 WEST SECTION

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE
412 Scott Ann Ave. Houma, LA 70363
(985)851-1050 - tbsmith.com

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

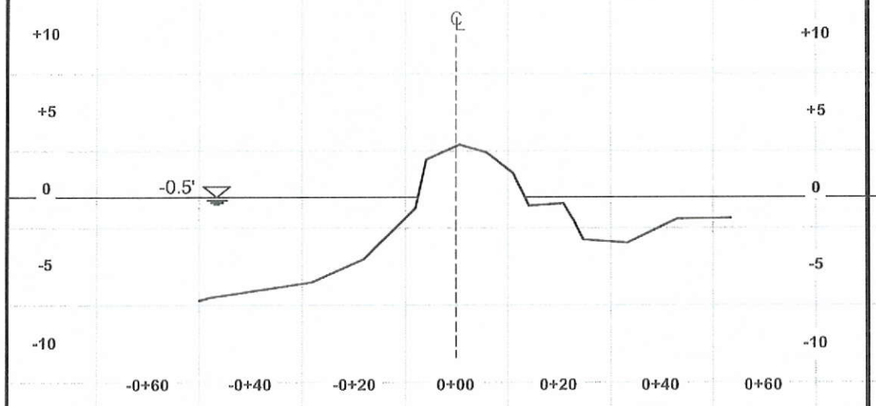
DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		
PROJECTION: LA83-SF-MOD			
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88			
GRID UNITS: US SURVEY FEET			
SHEET NO:	12 OF 22		

BREAKWATER TRANSECTS

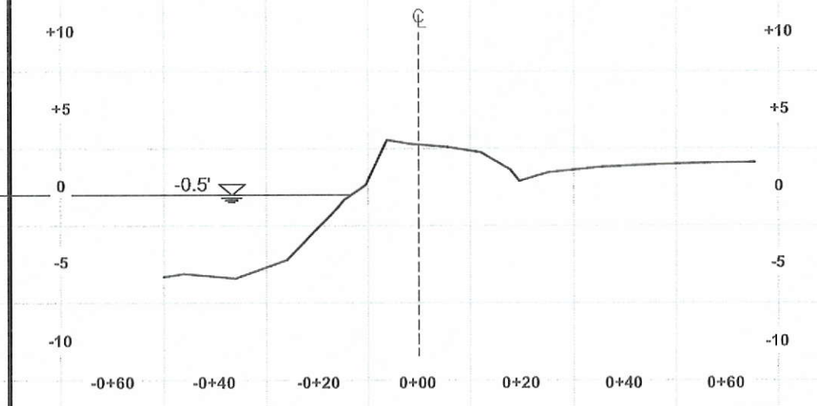
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

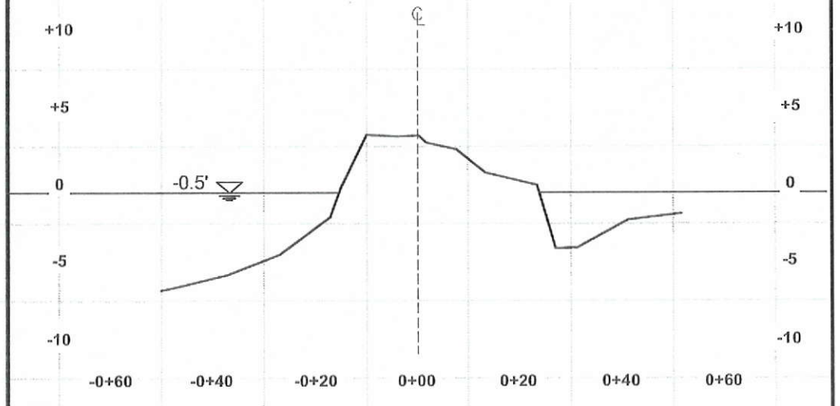
NOTE: ALL PROFILES SHOWN LOOKING WEST



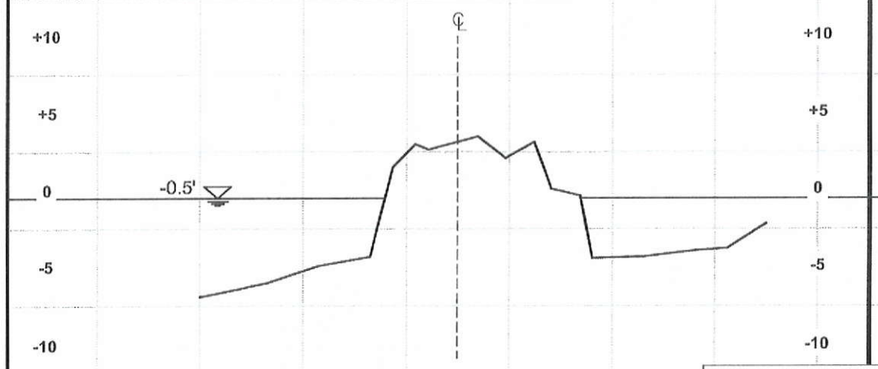
BREAKWATER #6 EAST SECTION



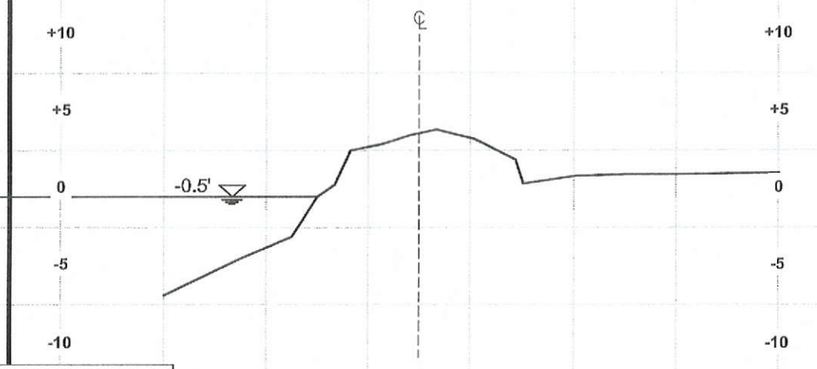
BREAKWATER #6 MID SECTION



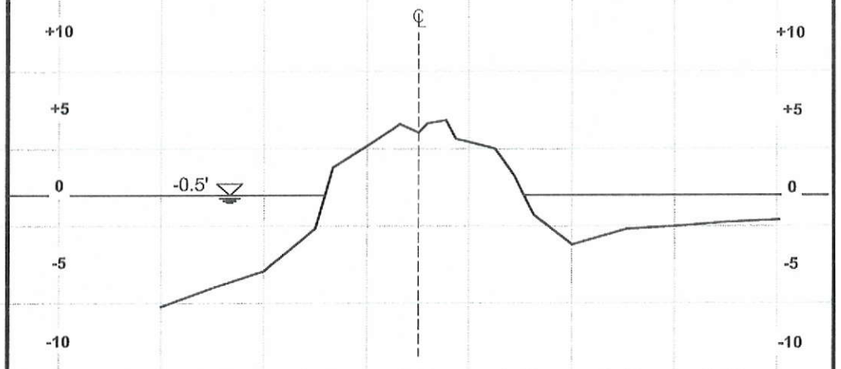
BREAKWATER #6 WEST SECTION



BREAKWATER #7 EAST SECTION



BREAKWATER #7 MID SECTION



BREAKWATER #7 WEST SECTION

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
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DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072

DRAWING NAME: 7-17 150072X-SEC01.DWG

PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

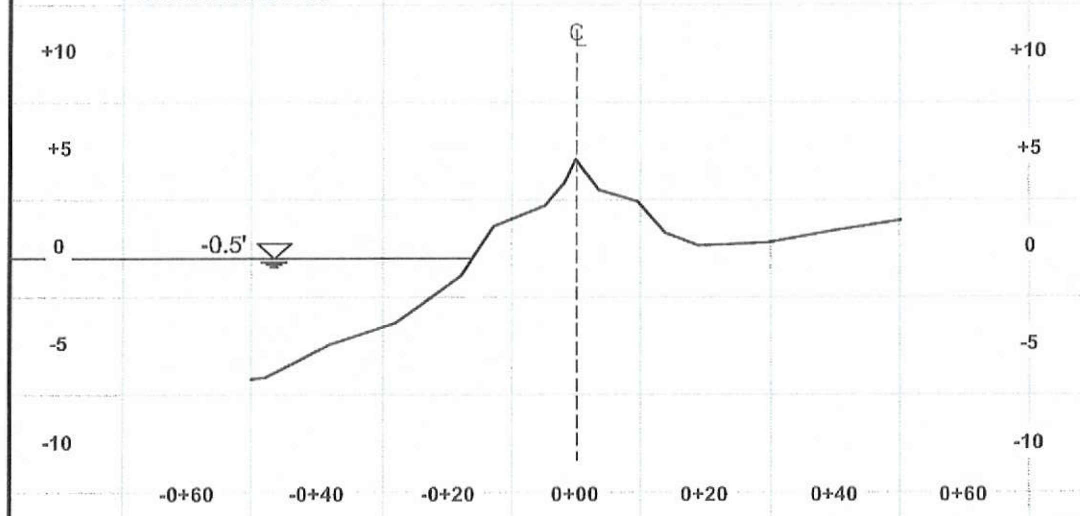
SHEET NO: 13 OF 22

BREAKWATER TRANSECTS

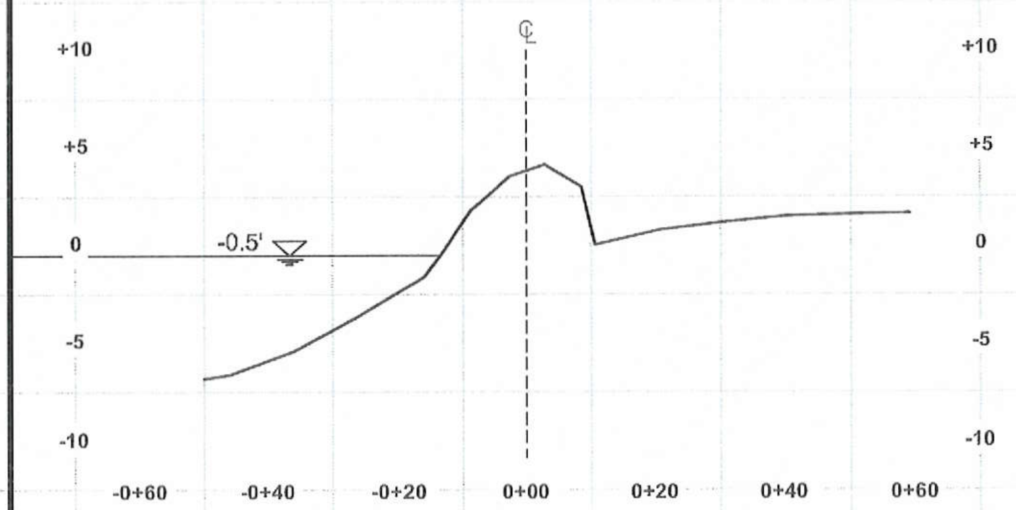
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/ MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

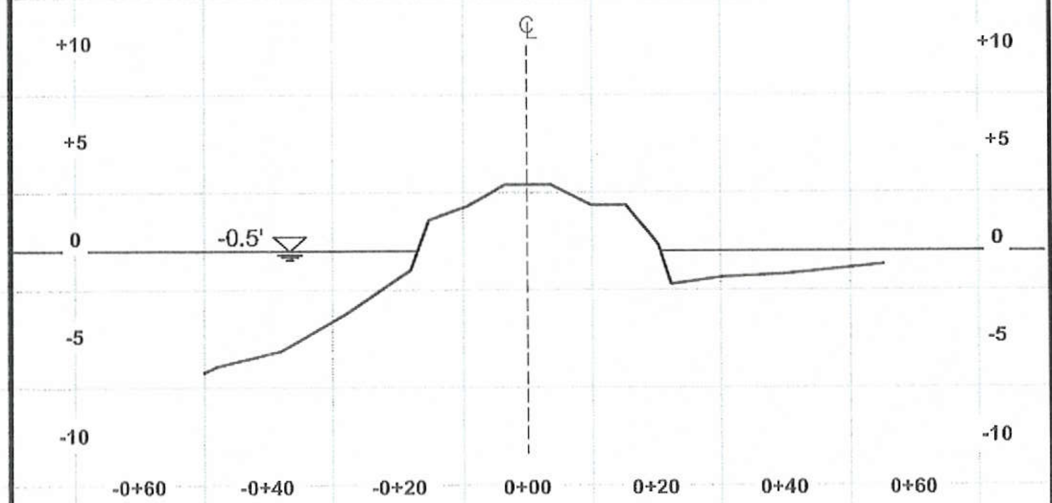
NOTE: ALL PROFILES SHOWN LOOKING WEST



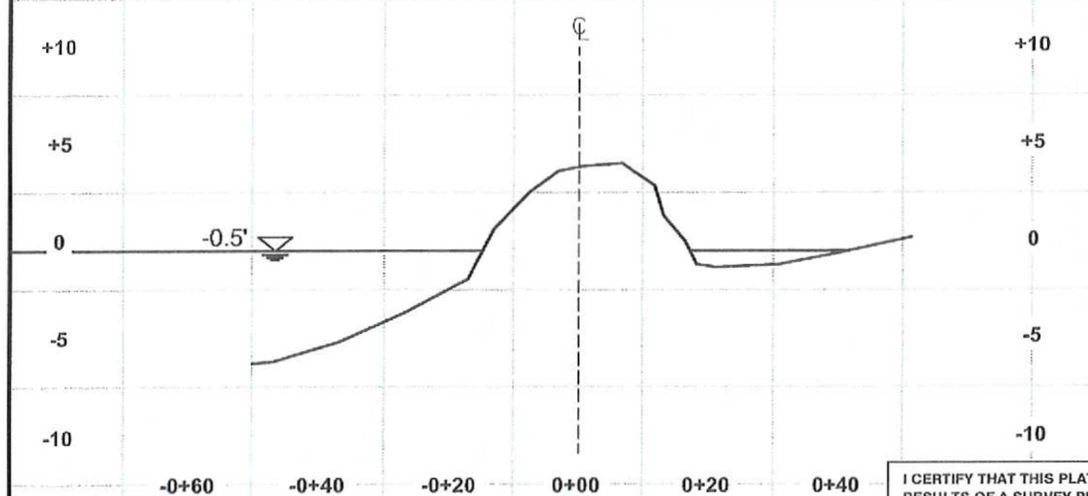
BREAKWATER #8 EAST SECTION



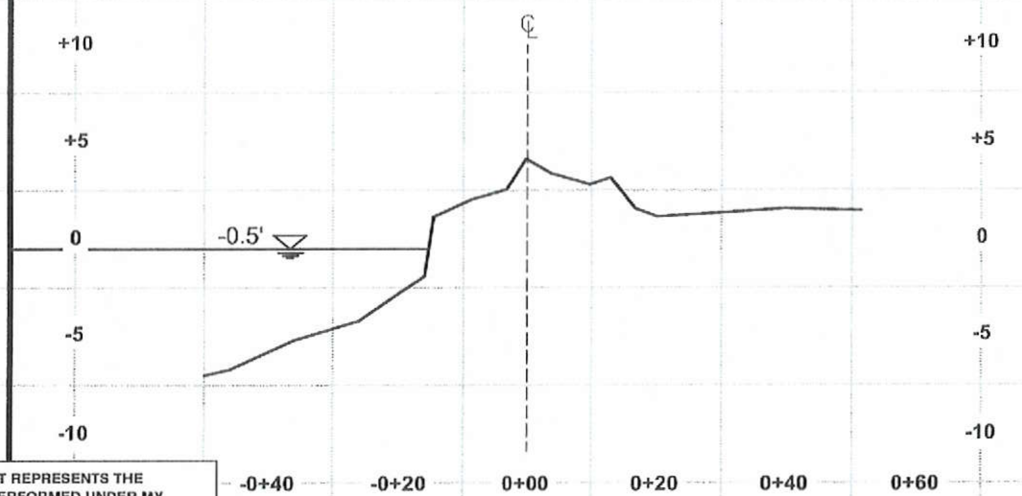
BREAKWATER #8 MID SECTION



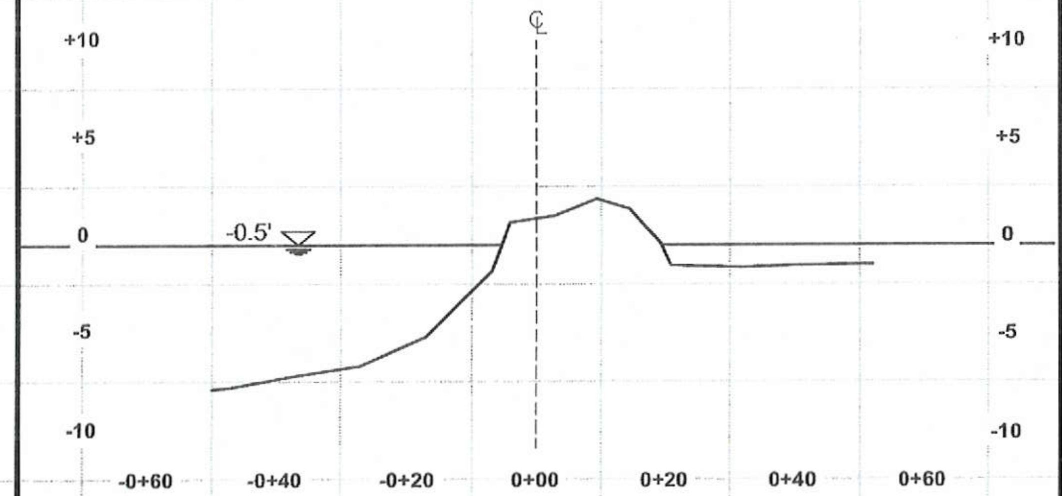
BREAKWATER #8 WEST SECTION



BREAKWATER #9 EAST SECTION



BREAKWATER #9 MID SECTION



BREAKWATER #9 WEST SECTION

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO: 00	REV. DATE: --/--/--	REV. BY: ---

REVISION DESCRIPTION:
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DRAWN BY: A.W.S.	APPROVED BY: K.S.B.
DATE: 5/5/2015	JOB NO: 2015.0072
DRAWING NAME: 7-17 150072X-SEC01.DWG	

PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

SHEET NO: 14 OF 22

BREAKWATER TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

NOTE: ALL PROFILES
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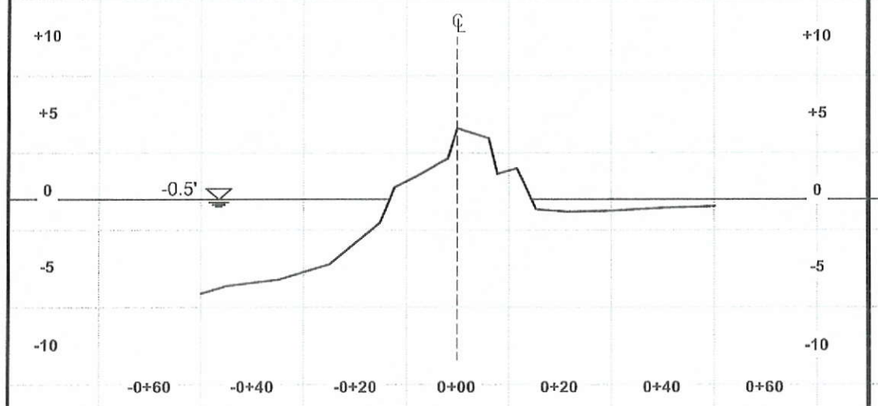
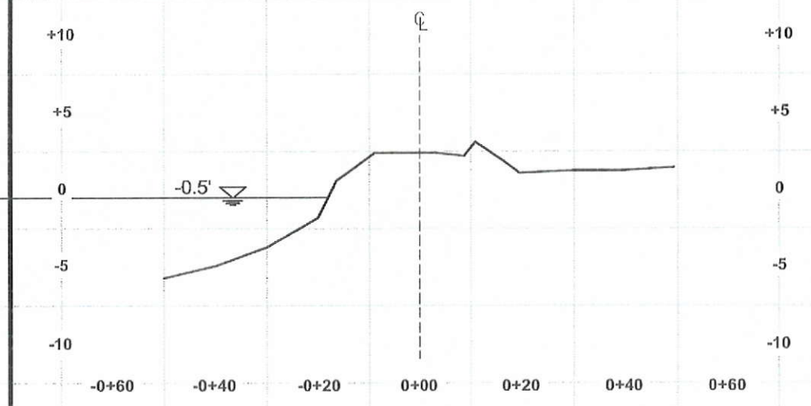
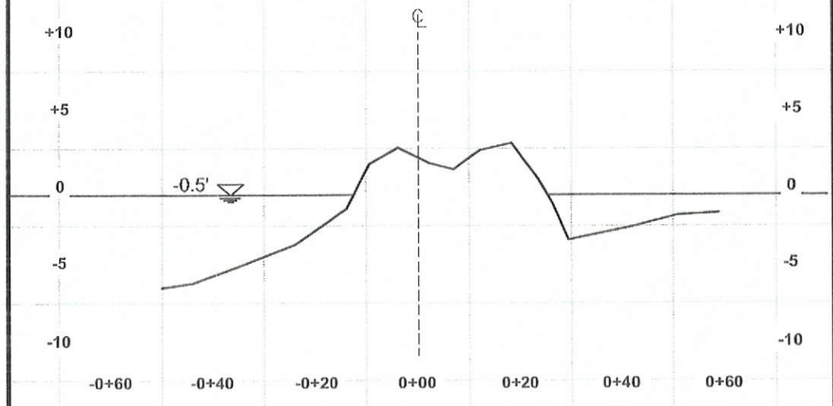


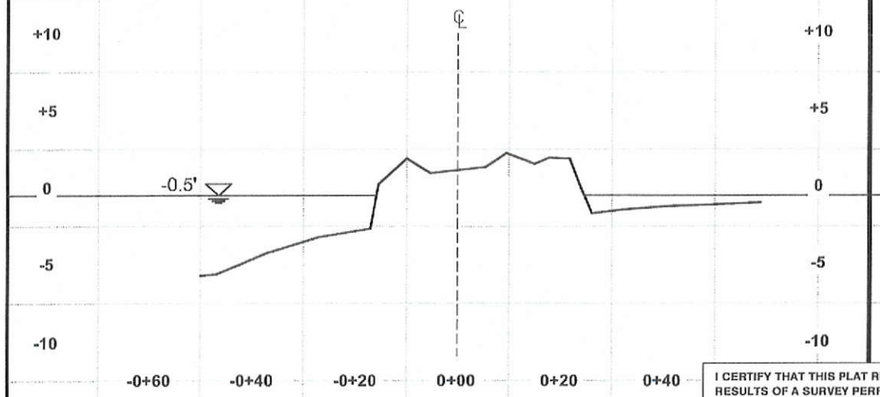
BREAKWATER #10 EAST SECTION



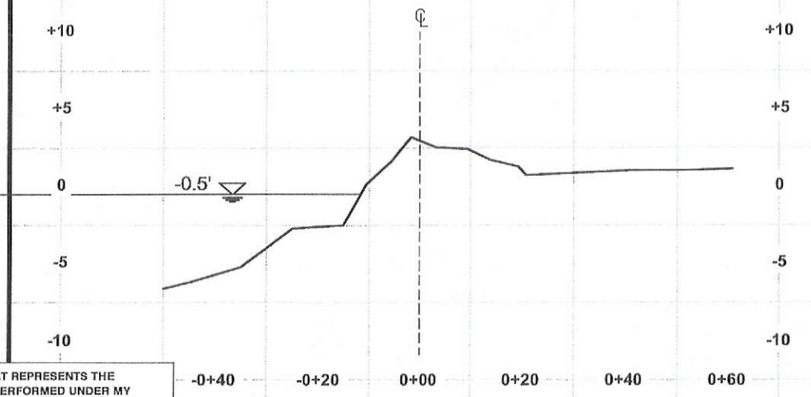
BREAKWATER #10 MID SECTION



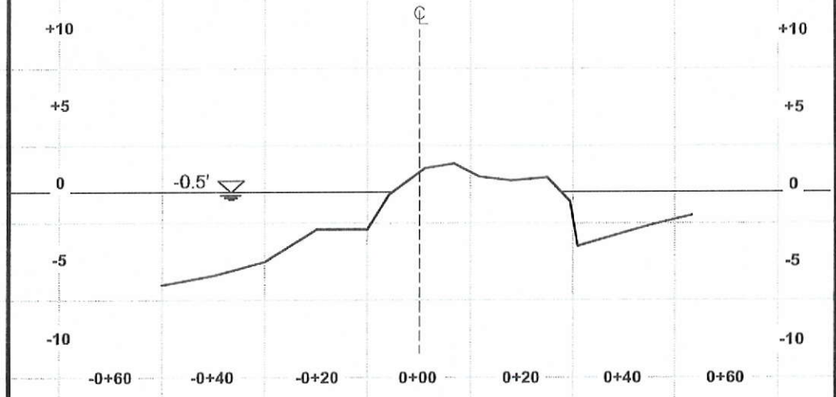
BREAKWATER #10 WEST SECTION



BREAKWATER #11 EAST SECTION



BREAKWATER #11 MID SECTION



BREAKWATER #11 WEST SECTION

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

NOTES:

CPRA

TBS **T. BAKER SMITH**
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
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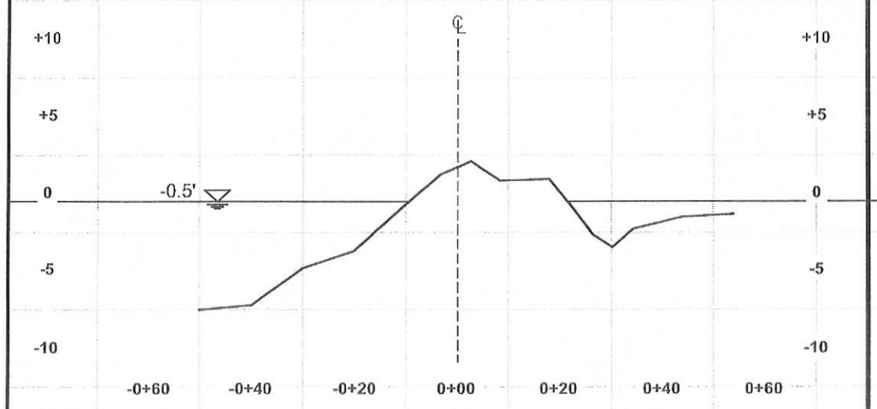
DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:		7-17 150072X-SEC01.DWG	
PROJECTION: LA83-SF-MOD			
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88			
GRID UNITS: US SURVEY FEET			
SHEET NO:	15	OF	22

BREAKWATER TRANSECTS

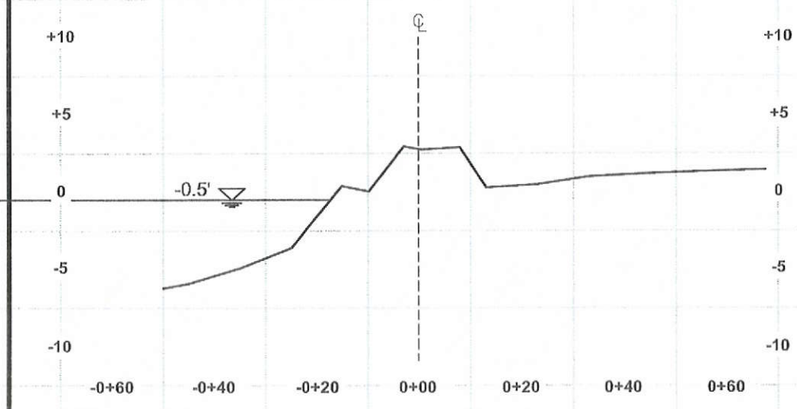
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

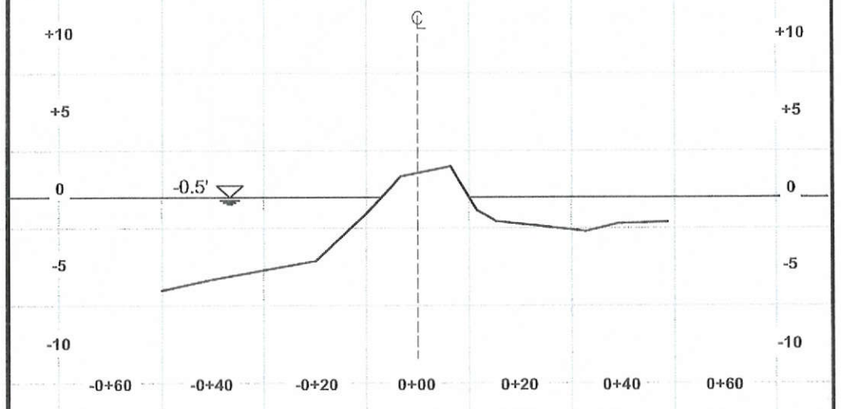
NOTE: ALL PROFILES SHOWN LOOKING WEST



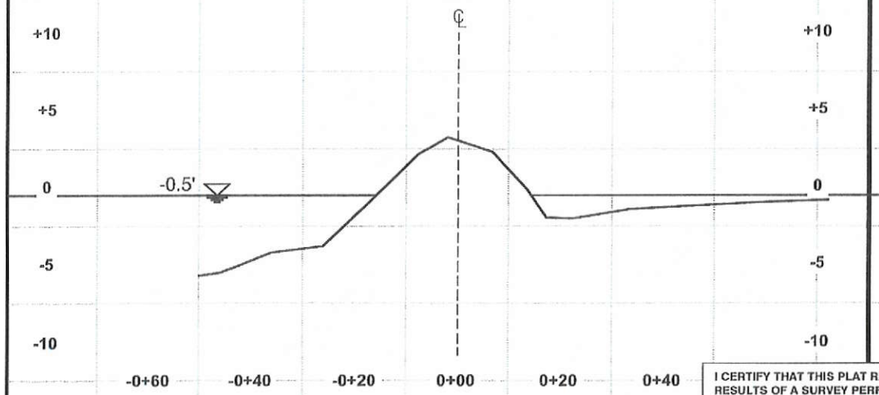
BREAKWATER #12 EAST SECTION



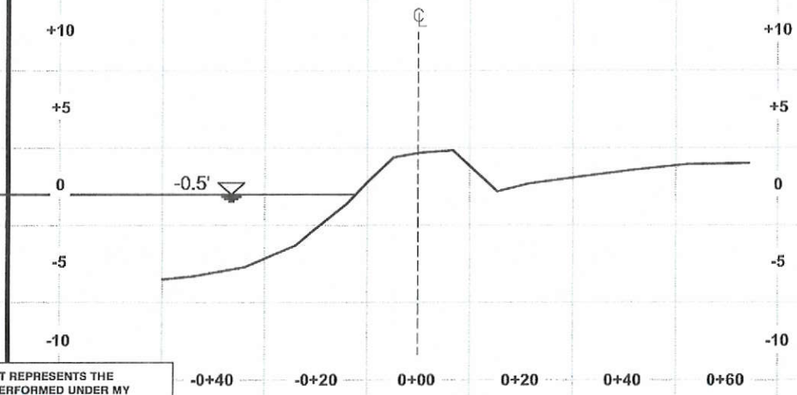
BREAKWATER #12 MID SECTION



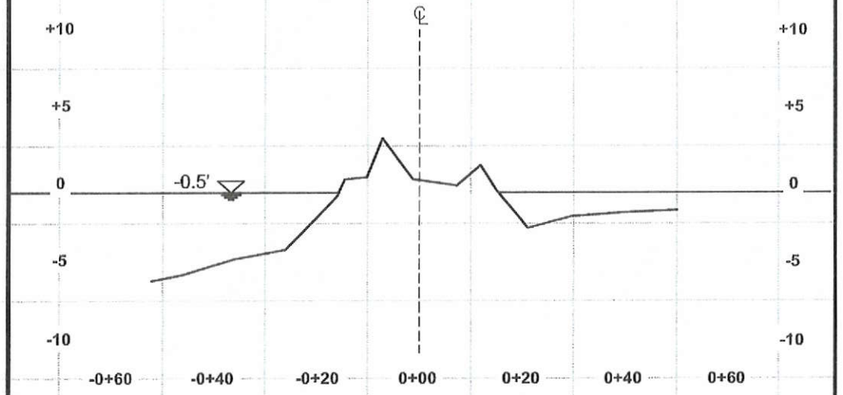
BREAKWATER #12 WEST SECTION



BREAKWATER #13 EAST SECTION



BREAKWATER #13 MID SECTION



BREAKWATER #13 WEST SECTION

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		

PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

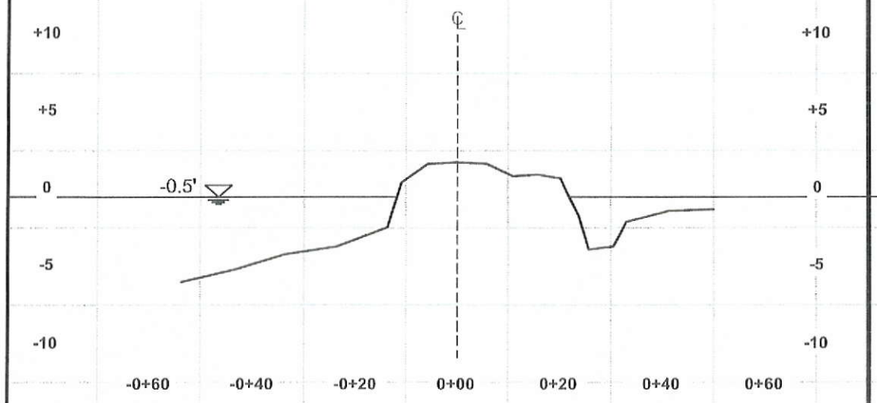
SHEET NO: 16 OF 22

BREAKWATER TRANSECTS

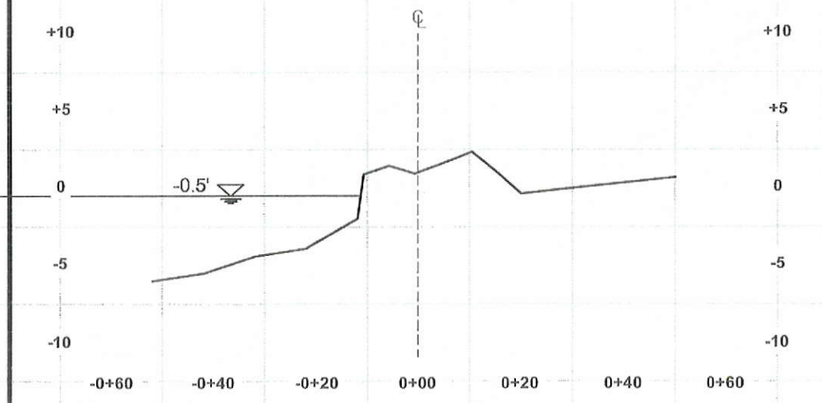
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

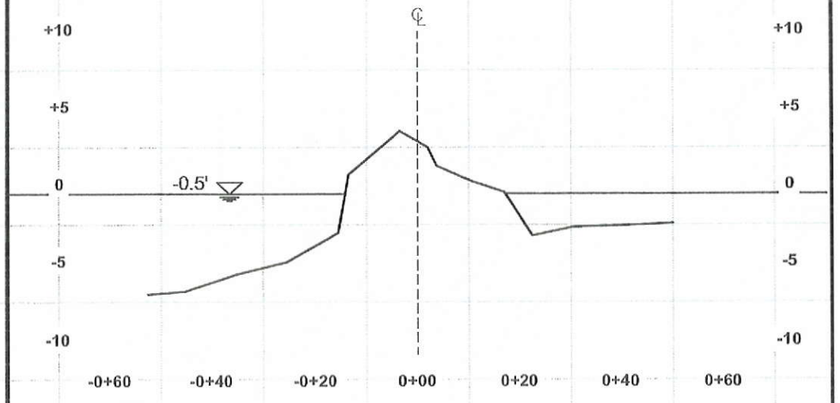
NOTE: ALL PROFILES SHOWN LOOKING WEST



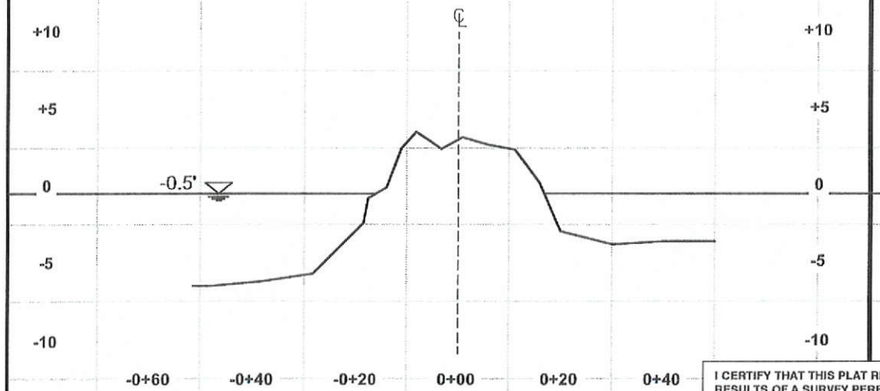
BREAKWATER #14 EAST SECTION



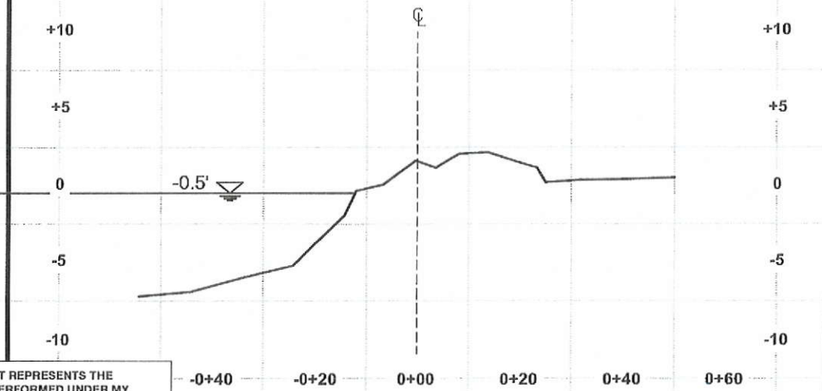
BREAKWATER #14 MID SECTION



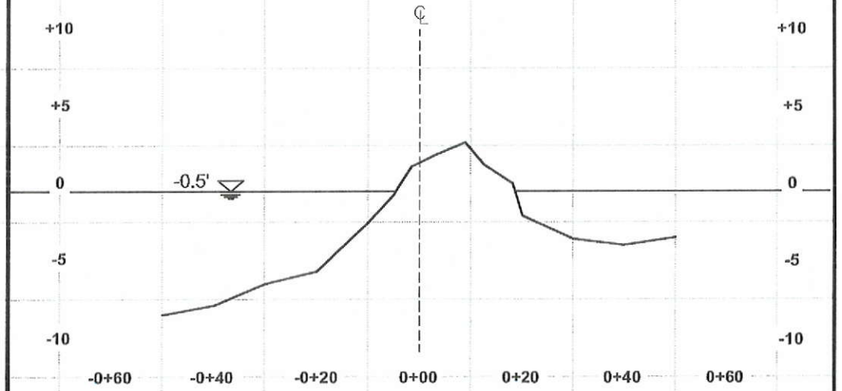
BREAKWATER #14 WEST SECTION



BREAKWATER #15 EAST SECTION



BREAKWATER #15 MID SECTION



BREAKWATER #15 WEST SECTION

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 30'
30' 15' 0' 30'
VERTICAL SCALE: 1" = 10'
10' 5' 0' 10'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

DRAWN BY:	A.W.S.	APPROVED BY:	K.S.B.
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	7-17 150072X-SEC01.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	17	OF	22

BREAKWATER TRANSECTS

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

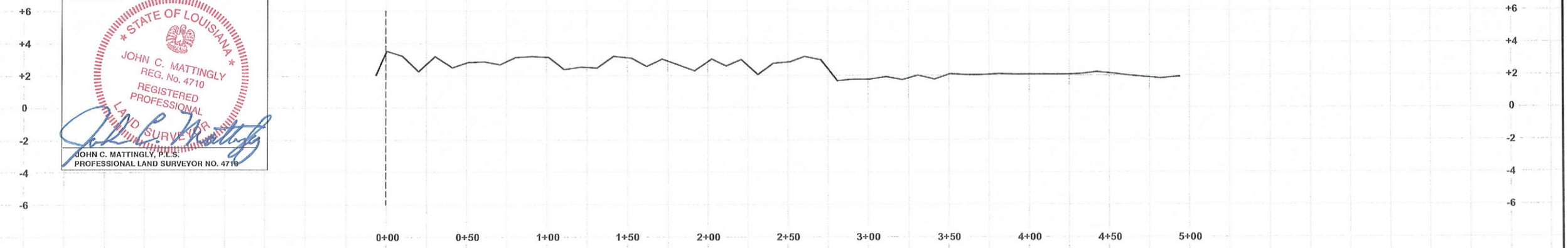
5/5/2015 - P:\Y-2015\2015.0072\DWG\7-17 150072X-SEC01.DWG

NOTE: PROFILE SHOWN
LOOKING NORTH

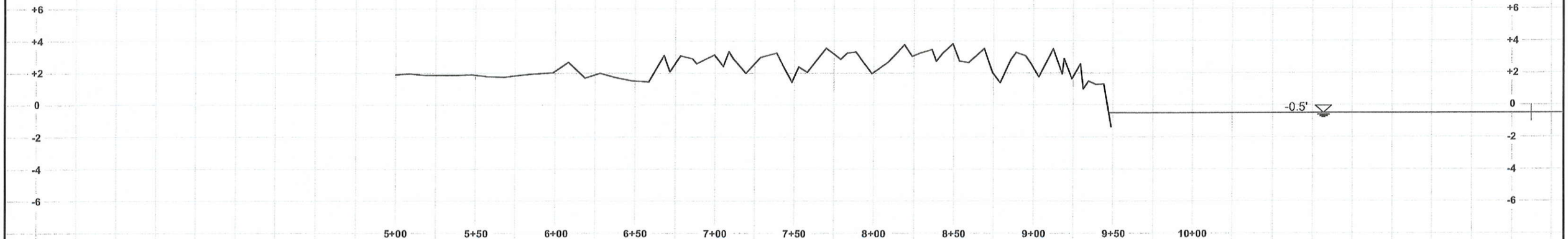
I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710



EAST GROIN PROFILE



EAST GROIN PROFILE CON'T

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
VERTICAL SCALE: 1" = 6'
6' 3' 0' 6'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

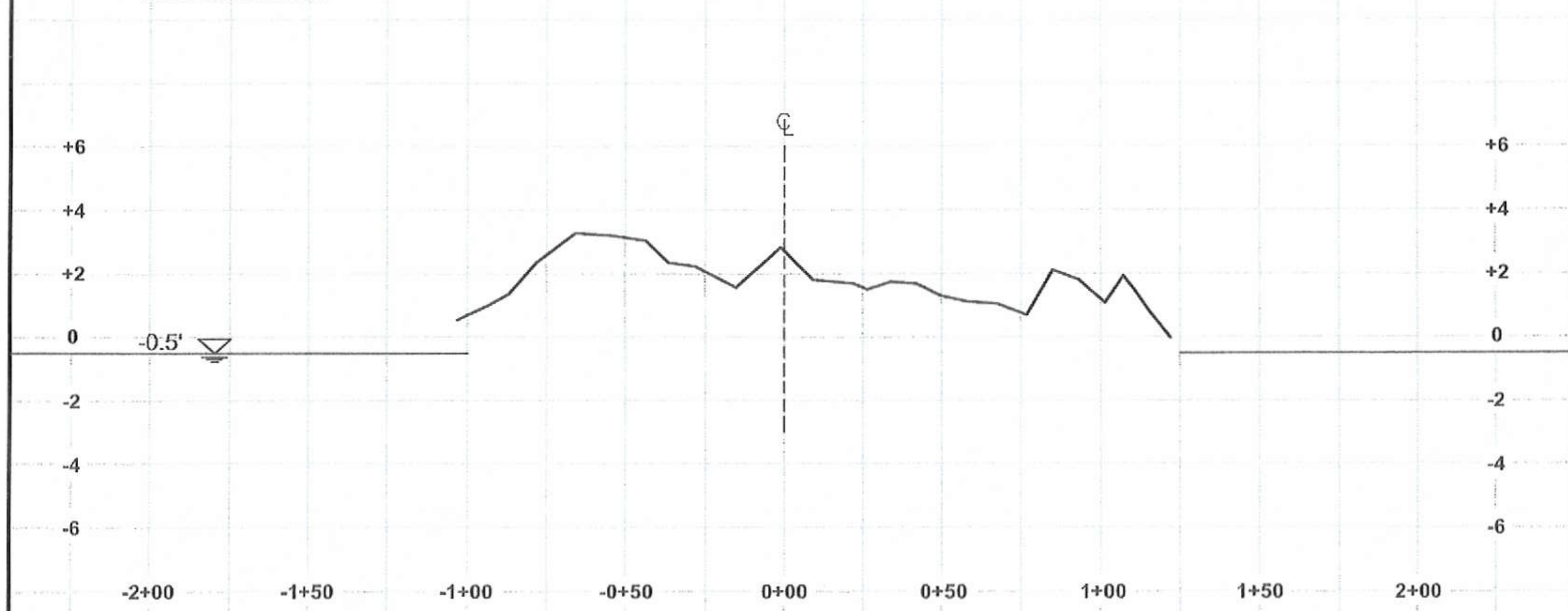
DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	18-22 PROFILES.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	18	OF	22

EAST GROIN PROFILE

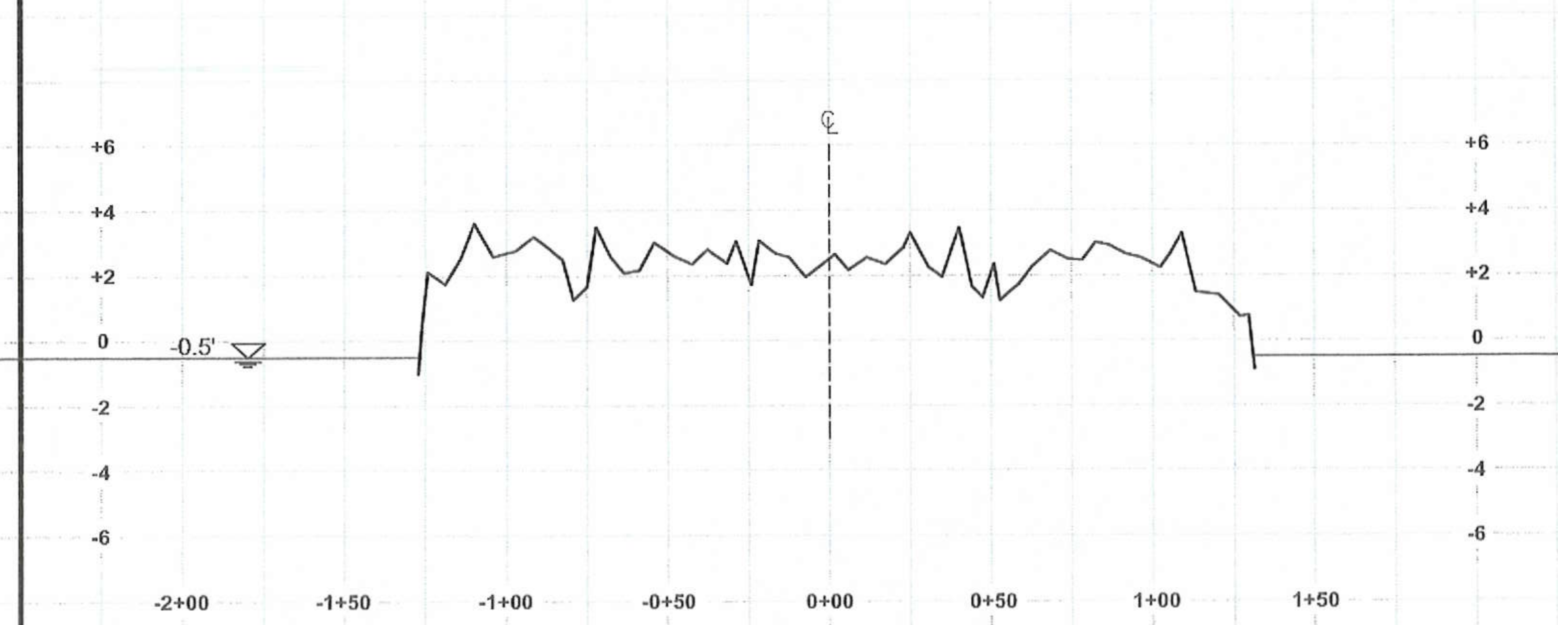
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\18-22 PROFILES.DWG

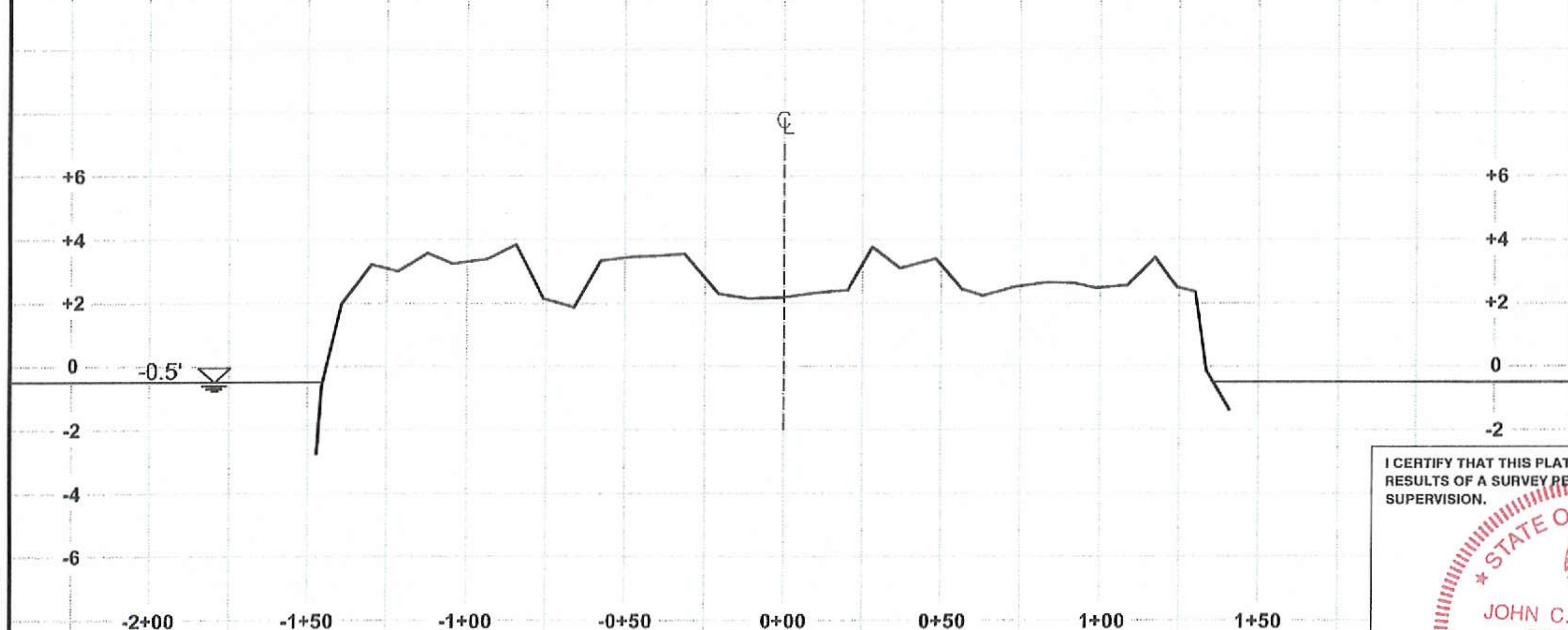
NOTE: ALL PROFILES
SHOWN LOOKING NORTH



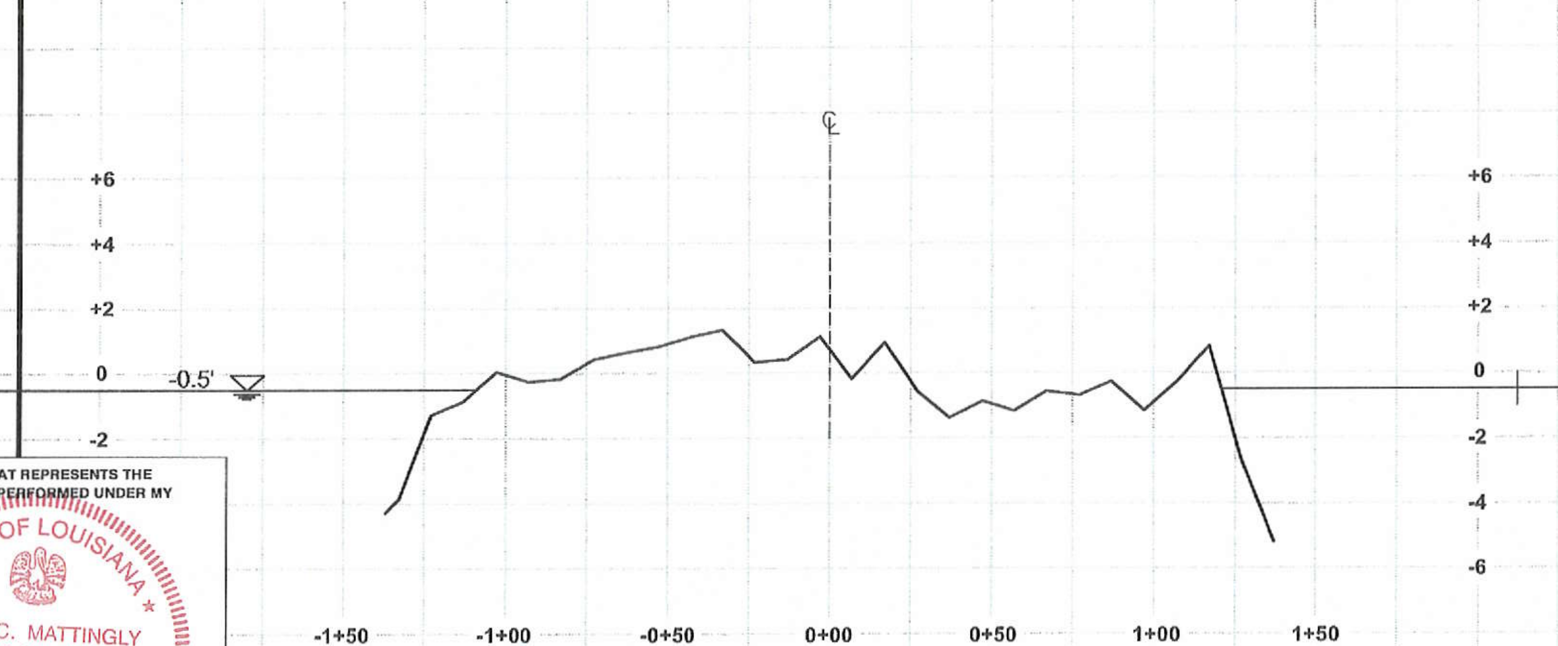
BREAKWATER #0 PROFILE



BREAKWATER #1 PROFILE



BREAKWATER #2 PROFILE



BREAKWATER #3 PROFILE

LEGEND

- TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015
- OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE

HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
VERTICAL SCALE: 1" = 6'
6' 3' 0' 6'

REV. NO: 00	REV. DATE: --/--/--	REV. BY: ---

REVISION DESCRIPTION:
--

DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	18-22 PROFILES.DWG		

PROJECTION: LA83-SF-MOD
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88
GRID UNITS: US SURVEY FEET

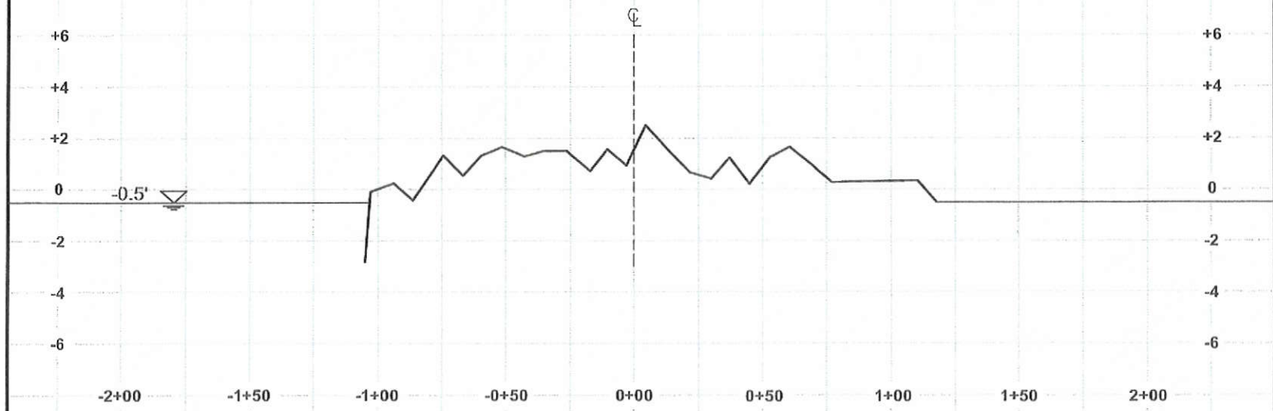
SHEET NO: 19 OF 22

BREAKWATER PROFILES

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\18-22 PROFILES.DWG

NOTE: ALL PROFILES
SHOWN LOOKING NORTH



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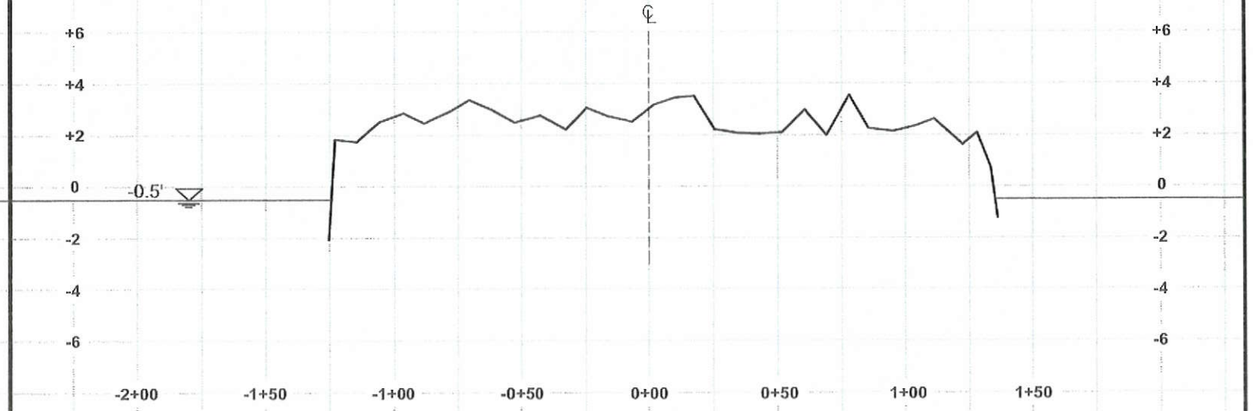

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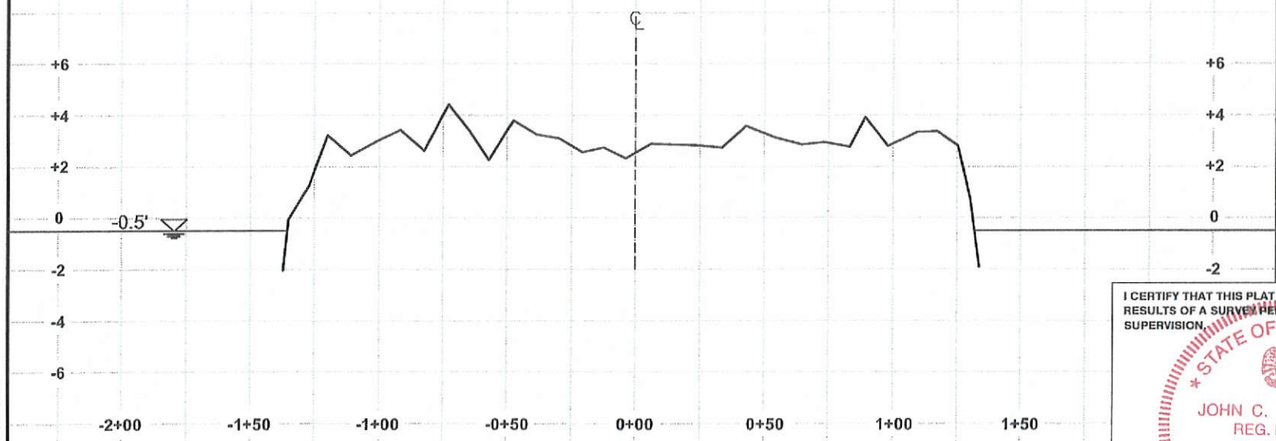

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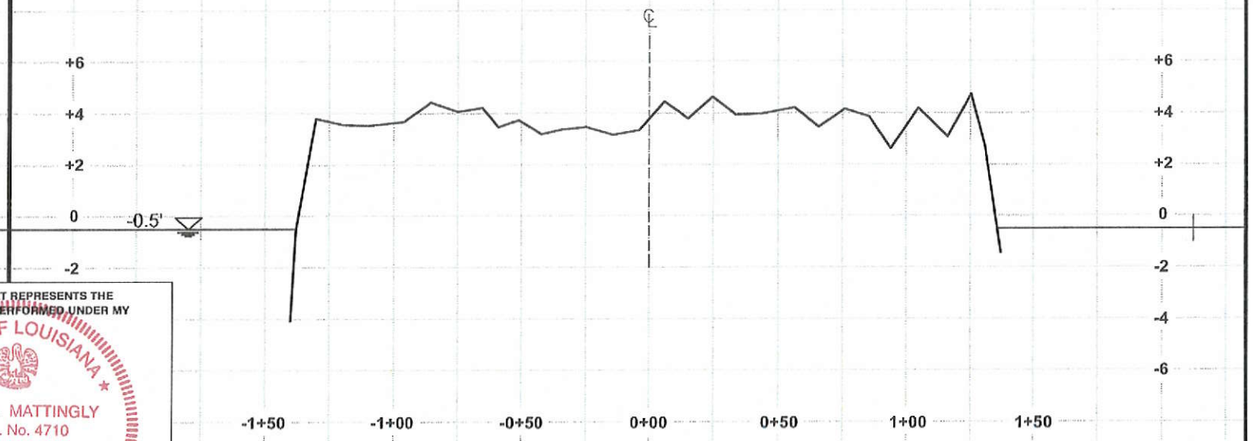


BREAKWATER #7 PROFILE

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE
[illegible]

HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
VERTICAL SCALE: 1" = 6'
6' 3' 0' 6'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

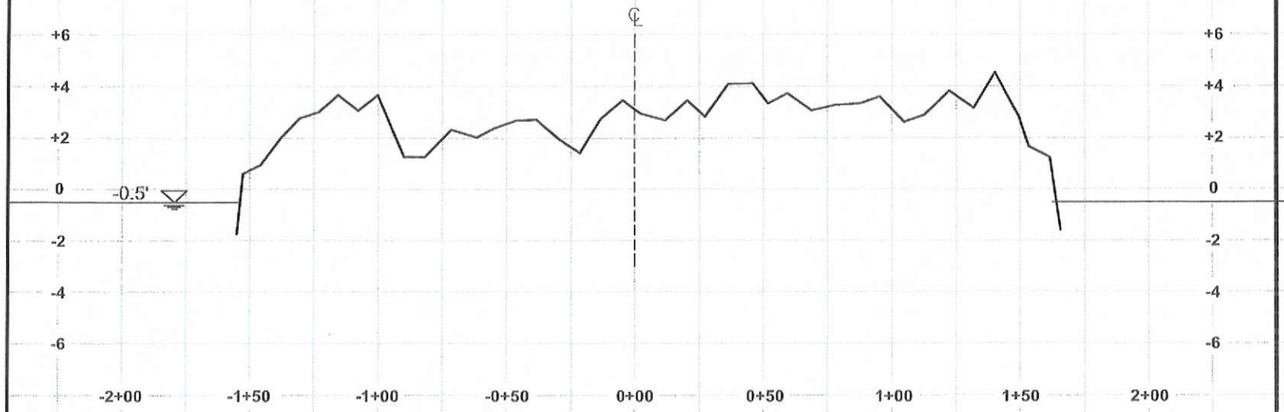
DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:		18-22 PROFILES.DWG	
PROJECTION: LA83-SF-MOD			
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88			
GRID UNITS: US SURVEY FEET			
SHEET NO:	20	OF	22

BREAKWATER PROFILES

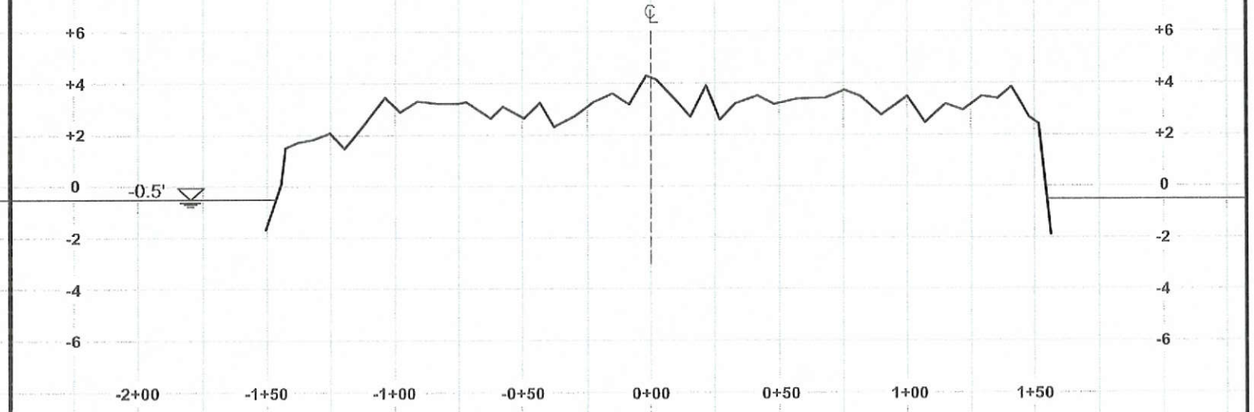
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\18-22 PROFILES.DWG

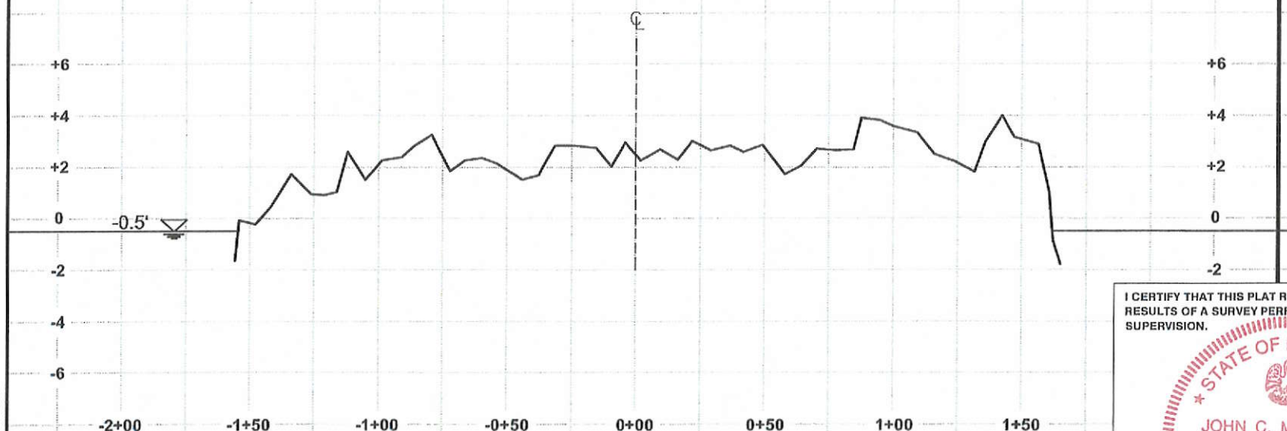
NOTE: ALL PROFILES
SHOWN LOOKING NORTH



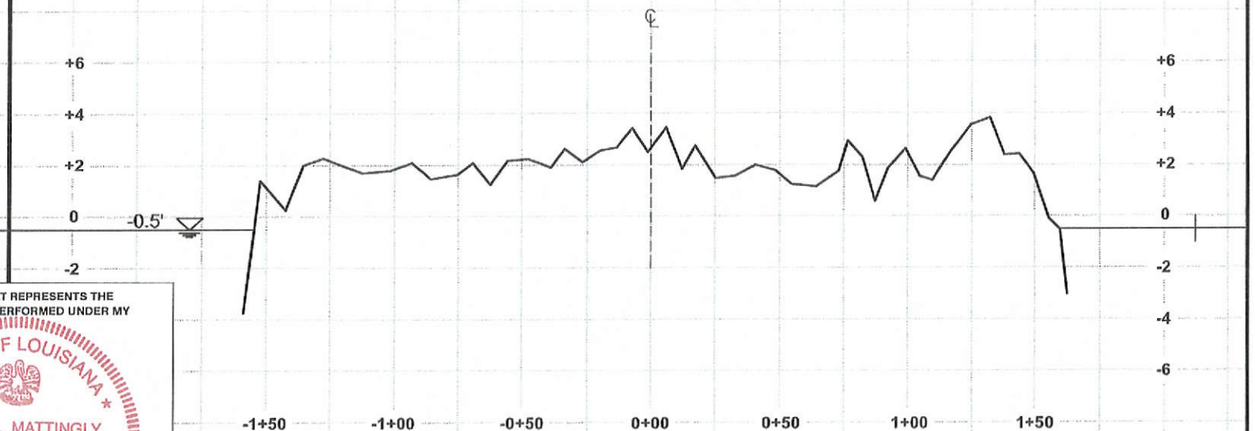
BREAKWATER #8 PROFILE



BREAKWATER #9 PROFILE



BREAKWATER #10 PROFILE



BREAKWATER #11 PROFILE

LEGEND

TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015

OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS T. BAKER SMITH
SOLUTIONS START HERE
412 South Van Ave., Houma, LA 70363
(985) 868-1050 - tbsmith.com

HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
VERTICAL SCALE: 1" = 6'
6' 3' 0' 6'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

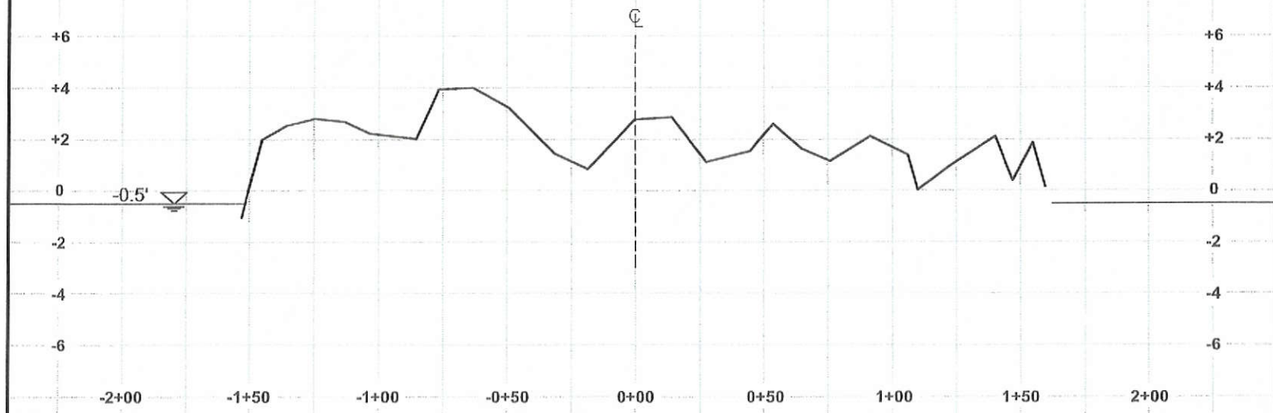
DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:		18-22 PROFILES.DWG	
PROJECTION: LA83-SF-MOD			
GEO. DATUM: NAD83 | VERT. DATUM: NAVD88			
GRID UNITS: US SURVEY FEET			
SHEET NO:	21	OF	22

BREAKWATER PROFILES

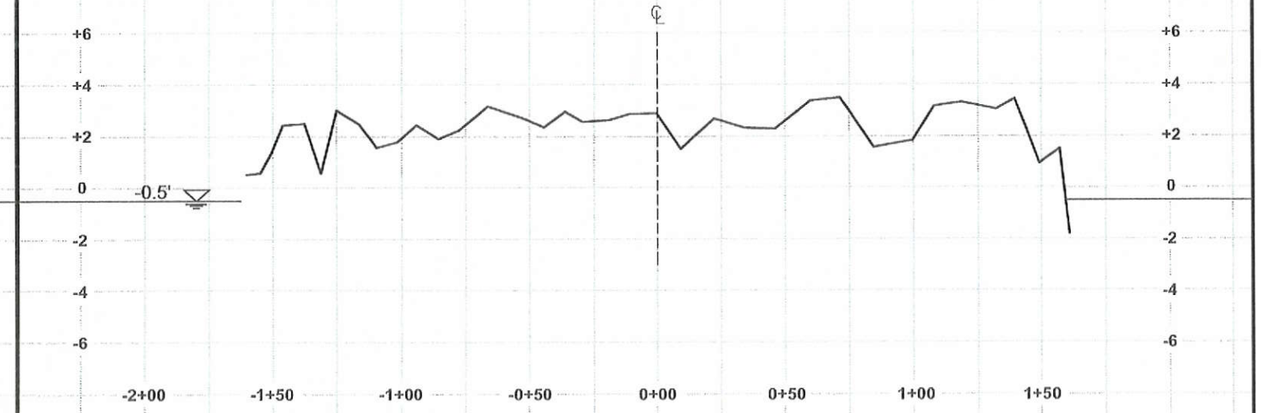
COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\18-22 PROFILES.DWG

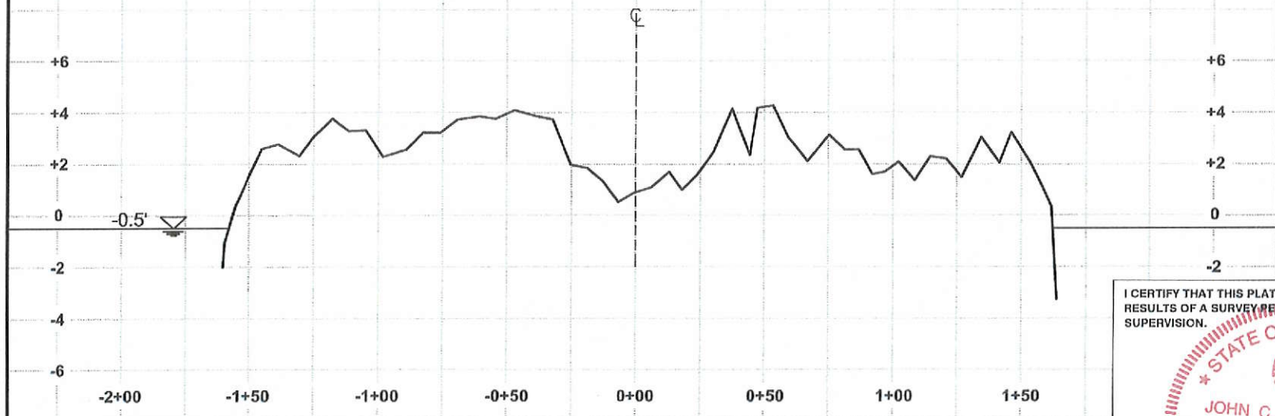
NOTE: ALL PROFILES
SHOWN LOOKING NORTH



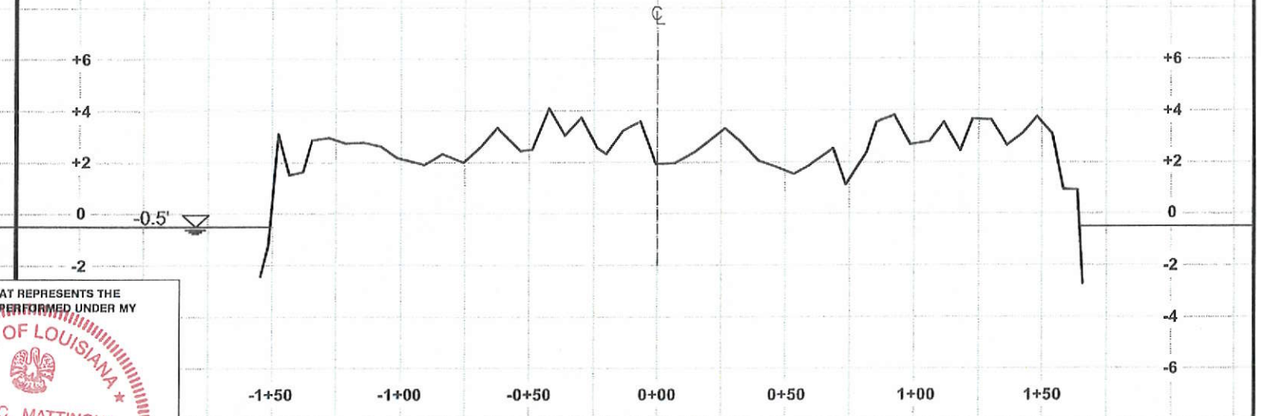
BREAKWATER #12 PROFILE



BREAKWATER #13 PROFILE



BREAKWATER #14 PROFILE



BREAKWATER #15 PROFILE

LEGEND

- TBS TOPOGRAPHIC SURVEY TAKEN FEBRUARY 2015
- OBSERVED WATER SURFACE ELEVATION -0.5'

I CERTIFY THAT THIS PLAT REPRESENTS THE RESULTS OF A SURVEY PERFORMED UNDER MY SUPERVISION.

STATE OF LOUISIANA
JOHN C. MATTINGLY
REG. No. 4710
REGISTERED PROFESSIONAL
LAND SURVEYOR

JOHN C. MATTINGLY, P.L.S.
PROFESSIONAL LAND SURVEYOR NO. 4710

NOTES:

CPRA

TBS **T. BAKER SMITH**
SOLUTIONS START HERE
812 South Van Ave, Houma LA 70363
985.858.1050 - tbsmith.com

HORIZONTAL SCALE: 1" = 60'
60' 30' 0' 60'
VERTICAL SCALE: 1" = 6'
6' 3' 0' 6'

REV. NO:	REV. DATE:	REV. BY:
00	--/--/--	---

REVISION DESCRIPTION:
--

DRAWN BY:	JMC	APPROVED BY:	JCM
DATE:	5/5/2015	JOB NO:	2015.0072
DRAWING NAME:	18-22 PROFILES.DWG		
PROJECTION: LA83-SF-MOD GEO. DATUM: NAD83 | VERT. DATUM: NAVD88 GRID UNITS: US SURVEY FEET			
SHEET NO:	22	OF	22

BREAKWATER PROFILES

COASTAL PROTECTION AND RESTORATION AUTHORITY
TETRA TECH, INC.
RACCOON ISLAND SHORELINE PROTECTION/
MARSH CREATION (TE-48) PROJECT
BREAKWATER SURVEY
TERREBONNE PARISH, LOUISIANA

5/5/2015 - P:\Y-2015\2015.0072\DWG\18-22 PROFILES.DWG