



Client Focused. Technology Driven.



Final Topographic Survey Report

Project:

**Bayou De Cade Ridge Restoration
and Marsh Creation (TE-0138)**

Terrebonne Parish, Louisiana

Prepared for:

**Mr. Joshua Sylvest
Coastal Protection and
Restoration Authority**

Prepared by:

**Mr. Justin Bordelon, PLS
Fenstermaker**

December 8, 2023



Final Topographic Survey Report

Prepared for the
Coastal Protection and Restoration Authority
in Support of
Bayou De Cade Ridge Restoration and Marsh Creation (TE-0138)
Terrebonne Parish, Louisiana

December 8, 2023

Introduction

The Operations Division of the Louisiana Coastal Protection and Restoration Authority (CPRA) is responsible for monitoring, maintaining, and operating projects that restore, create, enhance, and maintain coastal wetlands in Louisiana. Elevation change analysis is a vital tool for evaluating geomorphic alterations in ephemeral coastal environments shaped by erosional processes. Periodically, CPRA evaluates orthometric heights to determine project success and sustainability of the ecosystem. The Bayou De Cade Ridge Restoration and Marsh Creation Project (TE-0138) is one such area.

C. H. Fenstermaker & Associates, L.L.C. (Fenstermaker) is subcontracted to provide survey services to CPRA in support of this to conduct a topographic survey on predetermined cross sections of the marsh platform, containment ridge, and the intermittent dike systems within the project limits as obtained from the "Scope of Services".

Location

The project is located in Terrebonne Parish, Louisiana approximately twelve (12) miles west of Dulac and immediately west of Lake De Cade.

Pre-Planning and Survey Tasks to be performed

Upon receiving a Work Authorization from CPRA on October 16, 2023, Fenstermaker prepared for mobilization of field crews by uploading proposed survey lines and reference control in Trimble Business Center (TBC) software to facilitate accurately performing the topographic survey. As part of the planning and preparation phase, Fenstermaker conducted desktop research to gather important information necessary for the proposed surveys. This research involved accessing various sources, including online resources and Fenstermaker's Map Analyst GIS Database. The purpose of this research was to obtain existing water depth data and other relevant information related to the survey area.

TE-0138 Project Scope of Work for topographic survey consisted of the following tasks:

- Establishing updated static control for the TE28-SM-A monument.
- A topographic/bathymetric survey of the marsh platform, containment ridge, and intermittent dikes using previously established transects.
- Establishing water elevations at the beginning and end of each workday at the CRMS0398 Staff Gauge.

Bayou de Cade Ridge Restoration and Marsh Creation (TE-0138)

Static GPS Adjustment Results

NAD83 (2011) Louisiana South Zone (1702) - NAVD88 Geoid12B

Name	Latitude	Longitude	Ellipsoid Hgt	Northing	Easting	Elevation	Description
TE28-SM-A	29d23'29.65355"	-90d56'01.84830"	-79.754	324,457.86	3,408,054.68	1.52	MON
110723DTG1S	29d22'50.60220"	-90d55'09.40809"	-77.772	320,529.64	3,412,707.87	3.41	CP

Static GPS Survey at the Reference Control Benchmark

Prior to the mobilization, survey lines, and reference monuments were set up in the TBC project file and subsequently uploaded into the positioning device. On Friday, November 3, 2023, two survey crews were briefed on the topographic survey tasks to be completed. Two crews mobilized and traveled on Monday, November 6, 2023, from Fenstermaker's Lafayette office to the project site to commence the topographic survey tasks, with a third mobilizing on Tuesday, November 7 to assist with the efforts.

Upon arriving at the project site the Fenstermaker crews utilized survey vessels to navigate and locate the reference control point that was to be utilized for the survey. The survey crew proceeded to install a GPS base receiver on a fixed-height tripod measuring two meters in height. After all the necessary equipment was installed, the base unit was initialized, and the static GPS sessions commenced on TE28-SM-A. Next, a GPS rover unit (one per crew) was initialized to receive base corrections using Real-time Kinematic (RTK) for achieving sub-centimeter positioning. The survey crew located another secondary monument in the area, TE34-SM-01, and conducted daily quality checkpoint shots to ensure accurate positioning and validate the quality of the data. In addition, a temporary benchmark (TBM), 110723DTG1S, was set to ensure corrections reached the survey limits. This TBM was adjusted as described in the "Static GPS Downloading, Processing & Adjustments" section of this report. After validating the RTK system, the survey crews proceeded to navigate to the marsh creation area to commence the topographic surveys. Please find survey control photos in Folder 4 – Photos.



Base setup on TE28-SM-A

Upon completing the static GPS survey, GPS raw data files were downloaded, and then uploaded to Fenstermaker's FTP site for storage and further processing. All GPS raw data files were converted to RINEX format and then submitted to the NGS Online Positioning User Service (OPUS) Program¹. The OPUS Solutions for each day were tabulated and then averaged to determine the final positions. The final tabulated OPUS adjustment results can be found in Folder 1 – Static GPS.

The published horizontal datum for OPUS is based on the Continuously Operating Reference Stations (CORS) which is NAD83 (2011) 2010.00 Epoch. The vertical datum is the North American Vertical Datum of 1988 (NAVD88) using Geoid 12B.

Static GPS survey activities performed are in conformance with CPRA survey standards as specified in "A Contractor's Guide to the Standards of Practice Required by Louisiana Department of Natural Resources, Coastal Restoration Division for Contractor's Performing GPS Surveys and Establishing GPS Derived Orthometric Heights Within the Louisiana Coastal Zone Primary GPS Network" dated January 2019.

¹ The National Geodetic Survey operates the On-line Positioning User Service (OPUS) as a means to provide GPS users easier access to the National Spatial Reference System (NSRS). OPUS allows users to submit their GPS data files to NGS, where the data will be processed to determine a position using NGS computers and software. Each data file that is submitted will be processed with respect to 3 CORS sites.

Static GPS Downloading, Processing & Adjustments

After completing the static GPS survey, the raw GPS data was then downloaded into the project file created in Trimble Business Center (TBC) software. The IGS Precise Ephemeris was also downloaded from the NOAA/NGS Internet website for each day that GPS data was collected. All CORS¹ stations that were located nearest to or within the project area were also downloaded from the National Geodetic Survey (NGS) website and processed with the static GPS data. CORS Stations that were incorporated into the GPS network included “FSHS”, “AMER”, “AWES”, “LMCN”, and “HOUM”.

After post-processing the GPS Network, a report was generated in the TBC program and reviewed to determine satellite cycle slips to avoid baseline float solutions in the processed data. If a baseline float solution existed, the elevation mask was raised 5 degrees and the baseline was re-processed to eliminate satellite noise that may have existed close to the horizon. Once the processing phase was completed, the data was loaded into the adjustment program for further analysis and adjustment. All required adjustments were performed using the TBC Network Adjustment software.

The initial adjustment for the GPS network was minimally constrained to the published adjusted NAD83 (2011) Epoch 2010.00 and the published ellipsoid height at the antenna reference point (ARP) for CORS Station “LMCN”. A re-adjustment was performed to identify potential outliers to be disabled from the adjustment. A scale factor was determined from the Statistics Summary and applied to the network and re-adjusted until the Chi-Square Test passed with a 95% confidence level.

The final fully constrained adjustment was performed by holding to the published values for the CORS Stations antenna reference points (ARP) at “AMER”, “LMCN”, and “AWES”. Orthometric heights (elevations) were calculated using the Geoid12B model. The adjusted ellipsoid heights for the remainder of the CORS Stations were compared with their published NAD83 (2011) values as a quality control check. All GPS files were submitted to the NGS Online Positioning User Service (OPUS) Program² for an independent solution and comparisons were made with the final adjustment results shown in Attachment A. All raw GPS files, OPUS solutions, RINEX files, and Network Adjustment Reports have been provided in Folder 1 – Static GPS. An updated Monument Data Sheet for TE28-SM-A has been included in this folder reflecting the adjusted values for the monument.

RTK Survey of Topographic Features

At the beginning of the project, the RTK base unit was initialized at the designated location TE28-SM-A, as previously described in the GPS Survey at the Reference Control Benchmark section. To verify the operational status and accuracy of the system, a quality control shot was measured at benchmark "TE34-SM-01" using the roving units of each crew. This was done to ensure that the system was functioning properly and delivering corrected positions as expected. The base unit was then activated to begin additional static data collection while simultaneously transmitting GPS corrections to the RTK rover. The survey crew proceeded to navigate through the marsh platform using an airboat and marsh master. They conducted topographic surveys using a fixed-height pole with the RTK rover unit attached to the top, along with a 6-inch diameter plate affixed to the bottom of the pole. To prevent the rover rod from penetrating the water bottom, a flatfoot plate was securely attached to the bottom of the rover rod. This ensured stability and prevented any unintended sinking or penetration during the surveying process. All topographic data points and top-of-water elevations can be found in Folder 2- Topographic Surveys.

¹ The National Geodetic Survey (NGS) coordinates two networks of continuously operating reference stations (CORS): the National CORS network and the Cooperative CORS network. Each CORS site provides Global Positioning System (GPS) carrier phase and code range measurements in support of 3-dimensional positioning activities throughout the United States and its territories. Surveyors, GIS/LIS professionals, engineers, scientists, and others can apply CORS data to position points at which GPS data have been collected. The CORS system enables positioning accuracies that approach a few centimeters relative to the National Spatial Reference System, both horizontally and vertically.

² The National Geodetic Survey operates the On-line Positioning User Service (OPUS) as a means to provide GPS users easier access to the National Spatial Reference System (NSRS). OPUS allows users to submit their GPS data files to NGS, where the data will be processed to determine a position using NGS computers and software. Each data file that is submitted will be processed with respect to 3 CORS sites.

On November 6, 2023, surveys were initiated along the designated transects within the proposed marsh platform, containment ridge, and intermittent dike system. During the surveying process along the pre-plotted lines, various topographic features were captured, including natural ground, the toe and top of the levee, shorelines, water bottoms, and top-of-water shots. These elements were carefully documented and recorded to provide a comprehensive representation of the surveyed area. The topographic surveys within the marsh creation cell, containment ridge, and intermittent dike system were completed on November 9th, marking the conclusion of the fieldwork for those areas. The corresponding AutoCAD files and drawings can be found in Folder 3 – CAD.

GPS and RTK Survey Equipment

The static GPS surveys utilized a Trimble Navigation's dual-frequency R10 GNSS GPS receiver with an internal antenna, which also functioned as the base station. This equipment was employed to capture precise positioning data during the survey. To minimize the potential introduction of human error resulting from mismeasurement of GPS antenna heights, a two-meter fixed-height tripod was employed. This ensured consistency and accuracy in the positioning of the GPS antenna, reducing the likelihood of measurement errors during the survey. The GPS data collected during the survey was downloaded and subsequently processed and adjusted using Trimble Business Center (TBC) Software, specifically Versions 5.90 and 2023.10. This software provided the necessary tools and functionalities for efficient data analysis, adjustment, and preparation of the results. The Geoid12B model was used to determine the geoid separation and applied to the ellipsoid heights to determine elevation as specified in the scope.

To conduct the RTK surveys, a rover configuration was employed, utilizing Trimble Navigation's dual-frequency R8s and R12i GNSS GPS receivers with internal GPS antennas. The rovers were equipped with a radio link, allowing it to receive real-time corrections from the base station setup. This setup facilitated the transmission of accurate positioning corrections to the rover, enabling precise real-time kinematic measurements during the survey. For check shots during the survey, a two-meter fixed-height rod was utilized at the rover. This fixed-height rod ensured consistent and accurate measurements for reference points and validation purposes throughout the surveying process. The data was collected and stored on a Trimble® TSC7 dataloggers and downloaded using TBC, Versions 5.90 and 2023.10. All GPS and survey equipment utilized during the project has been thoroughly documented in the daily field notes. These comprehensive field notes have been compiled and are available for reference shown on Attachment B.

CRMS0398 Staff Gauge

At the beginning and end of each day, survey data was collected, as per the Scope of Services, an RTK top of water elevation was collected at the location of the Coastwide Reference Monitoring System (CRMS) station 0398, along with a visual reading of the water level on the gauge. This information was used to determine a gauge correction factor by subtracting the water level elevation from the visual gauge reading and then averaging that value per day. In Folder 5 – CRMS0398 Staff Gauge, daily photos, and the below chart can be found. Attachment – B shows the field note collections for each day that reflect the CRMS0398 staff gauge readings.



CRMS0389 Staff Gauge
11/08/2023 AM

Bayou De Cade Ridge Restoration and Marsh Creation (TE-0138)

CRMS0398 STAFF GAUGE

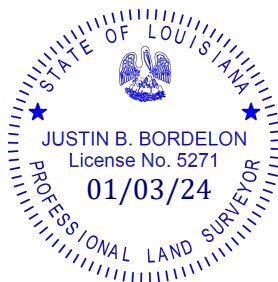
Louisiana South Zone NAD83 (2011) NAVD 88 Geoid 12B

	Point ID	Northing	Easting	Elevation	Code	Time of Reading	Gauge Reading	Date	Difference b/w Gauge and Elevation	Correction Factor	Average Correction Factor
AM	310-50-DTG	323711.27	3412929.69	0.74	WATER_TOP	10:52	0.89	11/6/2023	0.147	0.203	
PM	310-51-DTG	323711.88	3412929.43	0.42	WATER_TOP	14:45	0.68		0.258		
AM	311-50-BR	323710.09	3412928.83	0.80	WATER_TOP	8:31	0.90	11/7/2023	0.103	0.096	
	311-200	323709.73	3412927.92	0.73	WATER_TOP	8:28			0.172		
	311-10-JWB	323710.94	3412929.80	0.89	WATER_TOP	8:25			0.014		
PM	311-51-BR	323711.03	3412928.77	0.61	WATER_TOP	15:04	0.72	11/7/2023	0.112	0.127	
	311-201	323710.74	3412928.64	0.59	WATER_TOP	15:05			0.126		
	311-168-JWB	323711.46	3412929.47	0.58	WATER_TOP	15:04			0.143		
AM	312-20-BR	323711.96	3412929.49	0.77	WATER_TOP	8:02	0.88	11/8/2023	0.109	0.108	
	312-300-DTG	323711.34	3412928.62	0.75	WATER_TOP	8:03			0.129		
	312-1-JWB	323711.50	3412929.06	0.79	WATER_TOP	8:03			0.086		
PM	312-21-BR	323711.61	3412928.80	0.80	WATER_TOP	15:11	0.98	11/8/2023	0.184	0.161	
	312-301-DTG	323711.64	3412928.63	0.79	WATER_TOP	15:12			0.195		
	312-2-JWB	323710.23	3412928.28	0.88	WATER_TOP	15:11			0.104		
AM	313-20-BR	323710.80	3412928.68	0.78	WATER_TOP	7:57	0.90	11/9/2023	0.120	0.123	0.139
PM	313-21-BR	323711.16	3412928.60	0.67	WATER_TOP	11:09	0.79	0.125			

FINAL NOTE

Please be advised that the data, which was collected during the survey of this project, represents an epoch, a snapshot at the time that the survey was performed. Due to the effects of crustal motion, subsidence, upheaval, drought and other conditions which influence the physical position and stability of surface monuments, topographic features, and other structures within the Louisiana Coastal Zone, it is recommended that GPS monuments used for this project be re-observed and reprocessed in future surveys using the same reference control, if possible, for the purpose of updating the three dimensional position of the reference monuments.

The GPS/RTK Survey protocols performed in support of this project were in accordance with the Coastal Protection and Restoration Authority of Louisiana requirements as described in "A Contractor's Guide to the Standards of Practice Required by Louisiana Department of Natural Resources, Coastal Restoration Division for Contractor's Performing GPS Surveys and Establishing GPS Derived Orthometric Heights Within the Louisiana Coastal Zone Primary GPS Network" dated January 2019. All Static GPS files were adjusted using Trimble Business Center software to determine the final positions for all reference control monuments.



C. H. Fenstermaker & Associates, L.L.C.

Justin Bordelon

Justin Bordelon, PLS LA Reg. 5271
Advanced Technologies Manager

ATTACHMENT A

BAYOU DE CADE RIDGE RESTORATION AND MARSH CREATION (TE-0138)
 STATIC GPS RESULTS FROM OPUS SOLUTIONS COMPARED TO NETWORK ADJUSTMENT

TE28-SM-A

Solution No.	Latitude	Longitude	Ellipsoid Hgt	Northing	Easting	Elevation
te28310q	29d23'29.65366"	-90d56'01.84855"	-79.800	324457.87	3408054.66	1.47
te28311o	29d23'29.65348"	-90d56'01.84780"	-79.724	324457.85	3408054.73	1.55
te28312q	29d23'29.65330"	-90d56'01.84798"	-79.793	324457.83	3408054.71	1.48
te28313n	29d23'29.65319"	-90d56'01.84783"	-79.642	324457.82	3408054.72	1.63
OPUS AVERAGE	29d23'29.65341"	-90d56'01.84804"	-79.740	324457.84	3408054.70	1.53
NETWORK ADJUSTMENT	29d23'29.65355"	-90d56'01.84830"	-79.754	324457.86	3408054.68	1.52
Differences	0.00014"	0.00026"	0.014	0.01	-0.02	-0.01

110723DTG1S

Solution No.	Latitude	Longitude	Ellipsoid Hgt	Northing	Easting	Elevation
1107311t	29d22'50.60244"	-90d55'09.40775"	-77.821	320529.66	3412707.90	3.36
1107312o	29d22'50.60204"	-90d55'09.40814"	-77.815	320529.62	3412707.86	3.37
OPUS AVERAGE	29d22'50.60224"	-90d55'09.40795"	-77.818	320529.64	3412707.88	3.37
NETWORK ADJUSTMENT	29d22'50.60220"	-90d55'09.40809"	-77.772	320529.64	3412707.87	3.41
Differences	-0.00004	0.00014"	0.046	0.00	-0.01	0.05

41 Job # 2336989 Doc
 File 110623BR

CPRA
 Bayou De Cade ridge restoration
 Terrebonne Parish, LA

RTK R-10 Base on 2m Fixed Tripod @ TE28-SM-A
 R-85 Rover on 2m Pole Check @ TE34-SM-01
 H=0.137 V=0.484

CRMS0378 Staff gauge Reading
 10:52 AM Reading 0.89; Elev: 0.754
 2:45 PM Reading 0.68; Elev: 0.536

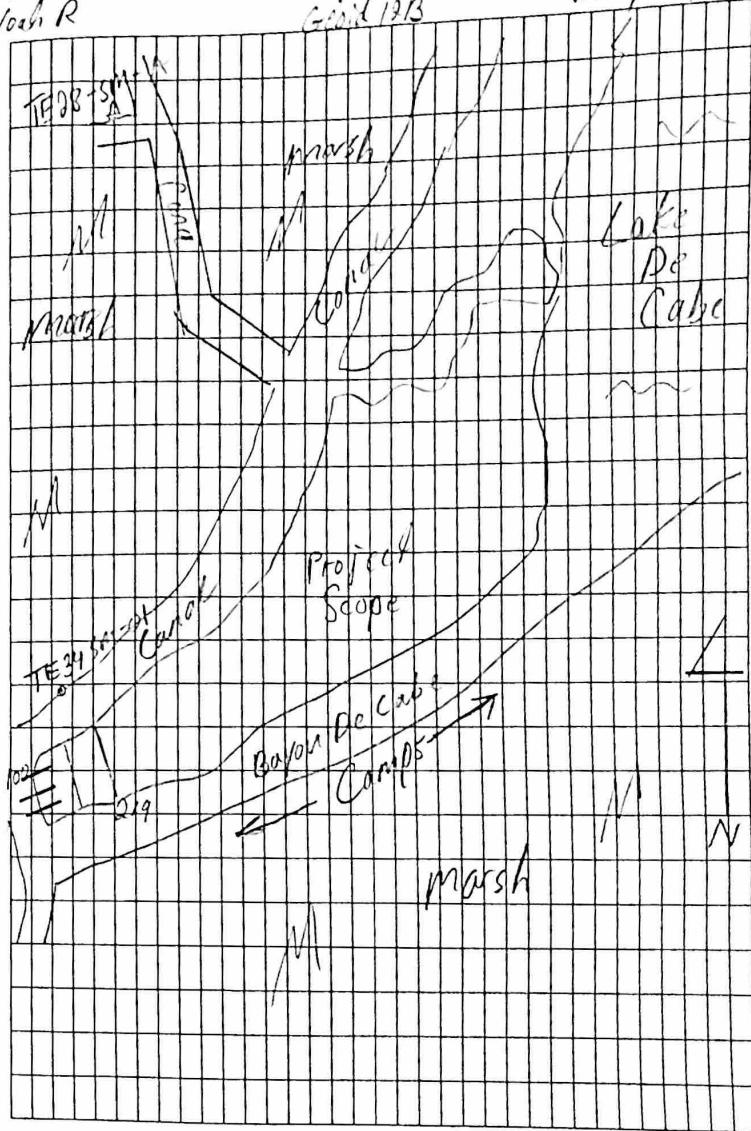
PT	Code	Description	HI
10	CP.CHK	TE34-SM-01 Iron rod	6.502
50-51	Water/bs	Top of Water	6.562
100-122	Water/NG	bottom, Toe, Top, NG/marsh	6.400
123-126	Water/NG	bottom, Toe, Top, NG	6.450
127-131	Levee	Slope, Crown, CL	6.450
132-211	Water/NG	bottom, NG/marsh	6.450
212-216	Levee	Slope, Crown, CL	6.450
217-219	Water	Top, Toe, bottom	6.450

Logged on TE28-SM-A From 10:28 AM to 3:42 PM

* Very Rough Terrain

8355 - -

Bryant R
 Noah R
 Base/rover
 RTK
 11/06/23
 Warm/Sunny 41



8355 - -

Job: 2236989.00 File: 110623DTG

Coastal Protection & Restoration Authority
 Bayou De Cade Ridge
 Bayou De Cade
 Terrebonne Parish, LA

Set RS base on TE28-SMA
 with fixed height (2m) tripod.

Checked on TE34 SM 01
 H.DIST = 0.153 V.DIST = 0.433

CRMS 0398 STAFF GAUGE READINGS

- 0.89' at 10:52 a.m.
- 0.68' at 2:45 p.m.

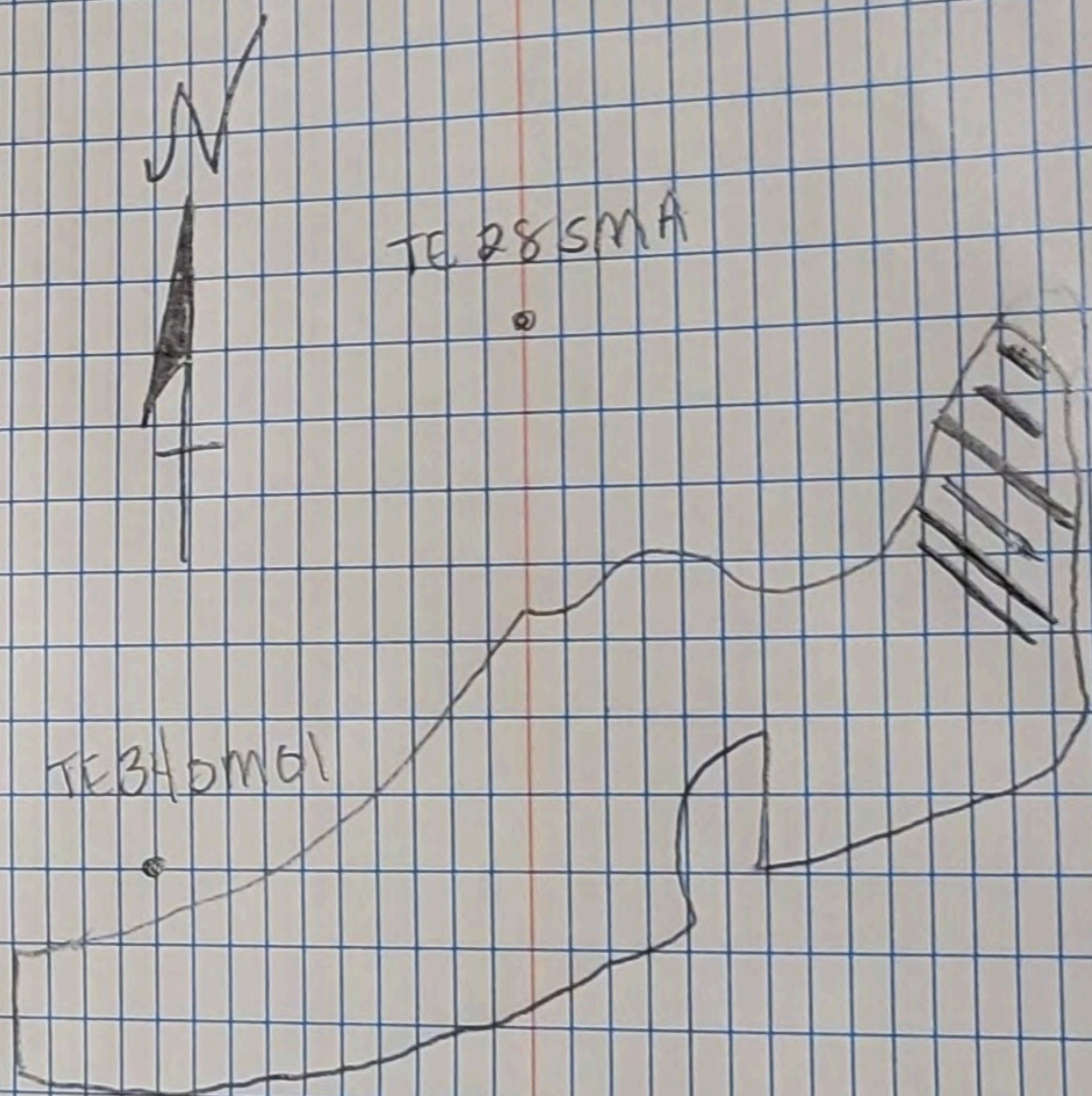
PT	HI	Code	Desc
10-11	6.562	CP-CHK	TE34 SM 01
50-51	6.562	WATER TOP	
101-250	6.562	NG, LEVEE	

8333--

David G.
 Chris F.

Fruck A13
 BB 13

11/06/23
 Warm & Calm 63



8333--

42 Job# 2236984.00C File: 110723BR

CPRA
Bayou De Cabe ridge restoration
Terrebonne Parish LA

RTK R-10 Base on 2M Fixed Tripod @ TE28-SM-A
R-8s rover on 2m pole check @ TE34-SM-d
H=0.122 V=0.453
CRMS0398 Staff gauge reading
8:31 AM reading 0.90 Elev: 0.798
3:04 PM reading 0.72 Elev: 0.609

PT	Code	Description	H.I
10-11	CP-CH	TE34-SM-01 Iron rod	6.562
50-51	Water	Top of water	6.450
100-520	Water	bottom, toe, top, slope, ll	6.450
5000	misc	Staff gauge in area	6.450

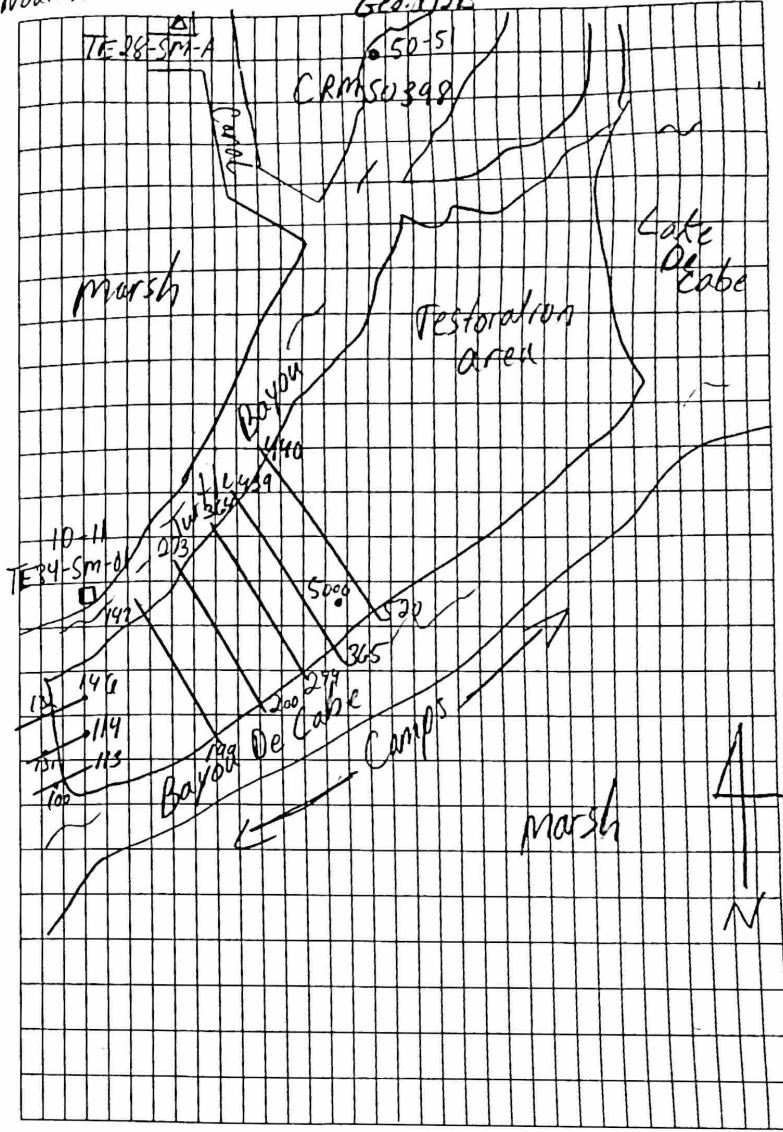
-Logged on TE28-SM-A From 8:11 AM to 3:11 AM

8355 ==

Bryant R
Noah R

Airboat
LA split
Geo: LIPB

Sunny/warm
42



8355 ==

64

Job: 2236A89.000 File: 110923DTG

Coastal Protection & Restoration Authority
 Bayou De Cade Ridge Restoration
 Bayou De Cade
 Terrebonne Parish, LA

Set RS base on TE28 SM A with
 2 meter fixed height tripod

Checked on TE34 SM 01. HI = 2m
 H. Dist = 0.158 V. Dist = 0.457

CRMS 0398 Staff Gauge:

AM $G_{\text{rod}} = 0.90$, RTK = 0.728 @ 8:28am

PM $G_{\text{rod}} = 0.72$, RTK = 0.594 @ 3:04pm

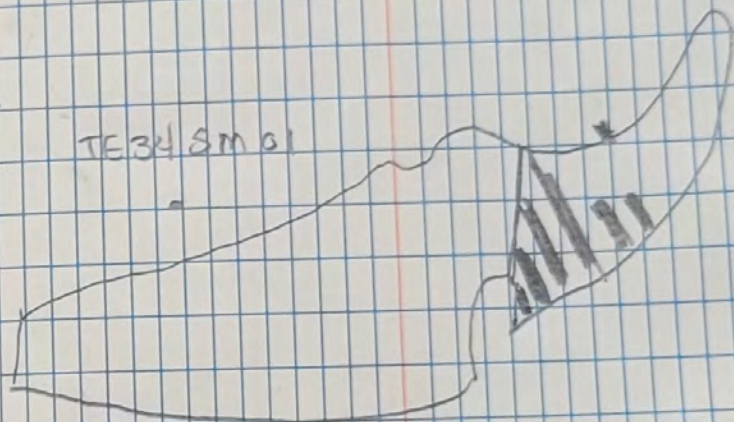
Pt	HI	Code	Desc.
20-21	6.562	CP-CHK	TE34 SM 01
200	6.562	WATER-TOP	
201	6.280	WATER-TOP	
2000-2195	6.280	NG, LEVEE, WATERBODY	
200000	6.562	CP-RTK	Set 8DD nail, 110923DTGIS

8333--

David G.
Chris F.June 213
BBIS - District11/07/23
Wagon 1
64

TE28 SM 01 A

TE34 SM 01



8333--

FILE: 110723JWB

JOB# 2236989.00C

CPRA

BAYOU DE CADE RIDGE RESTORATION

TERREBONNE PARISH, LA.

(RTK) R? BASE - RUNNING OFF DAVID G. BASE

RT: 3932 ROVER ON 2M POLE CHECK @ TE34-32-01

A H: .151 A V: -0.607

CRMS0398 STAFF GAGE READINGS

AM → 0.90 ; ELEV: 0.799

PM → 0.72 ; ELEV: 0.490

PTS.

DESCRIPTION

#	PTS.	DESCRIPTION
#	1, 2	CHECK @ TE34-32-01
#	3-45	X-SECTION DIKE
#	46-111	X-SECTION (LINE)
#	112-167	X-SECTION (LINE)

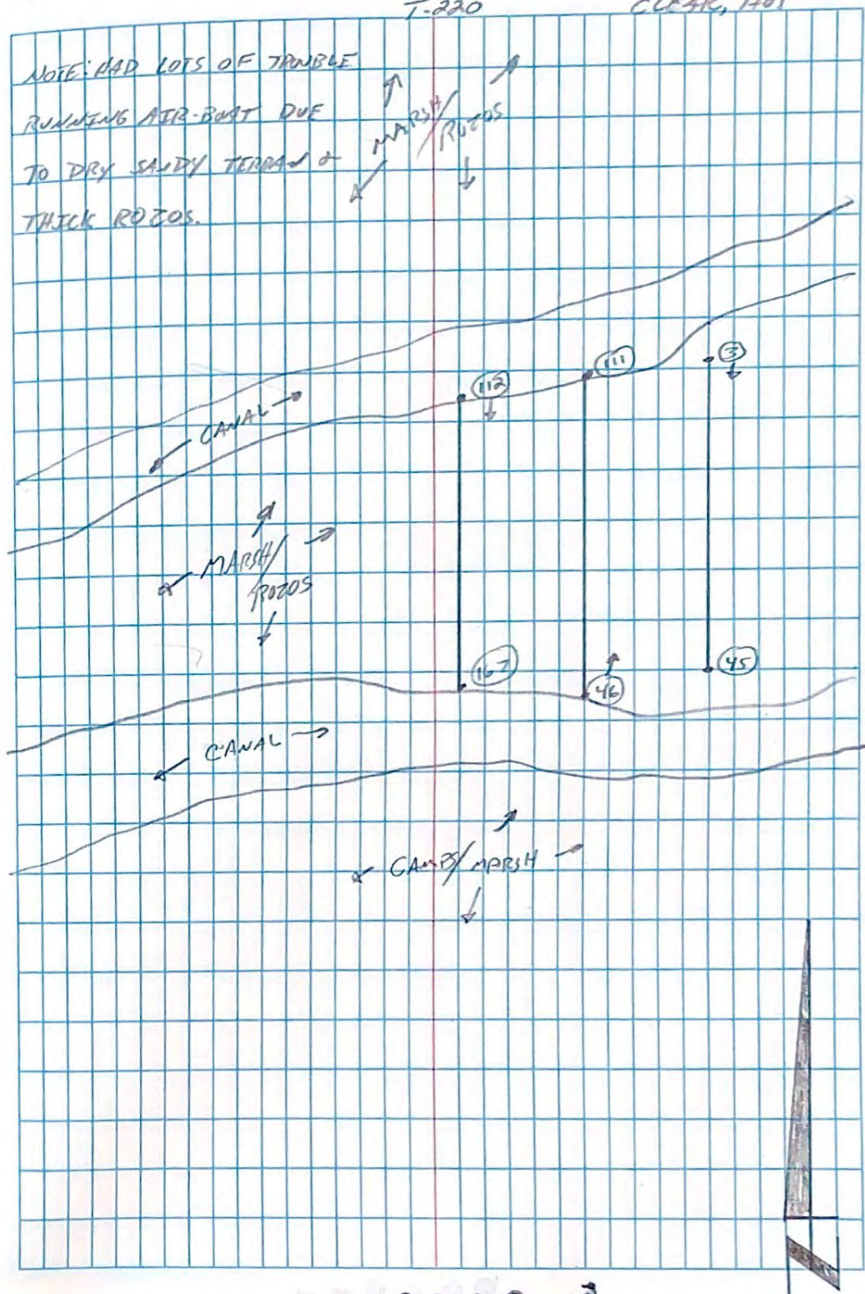
8238-1

J. BREAX
J. DWIGHTRTK LRS
AIRBOAT
T-220

11/07/23

CLEAR, HOT

NOTE: HAD LOTS OF TRAMPLE
RUNNING AIR-BOAT DUE
TO DRY SANDY TERRAIN &
THICK ROZOS.



8238-1

43 Job # 2236989 LOC

File: 110823BR

CPRA

Bayou De Cabe ridge restoration
Terrebonne Parish LA

RTK R-10 Base on 2m Fixed Tripod @ TE28-SM-A
R-8 rover on 2m pole Check @ 110723DTG IS
H=0.059 V=-0.138

CRMS0398 Staff gauge reading
8:02 AM reading 0.88 Elev: 0.771
3:11 PM reading 0.88 Elev: 0.796

PT	Code	Description	H.I
10-11	CP-CHK	110723DTG	6.562
20-21	Water	Top of water	6.450
100-133	NG/Levee	NG, Slope, crown, CL, bottom	6.450
134-214	NG/Levee	NG, Toe, Slope, Crown, CL	6.450
215-288	NG/Levee	NG, Slope, Crown, CL, bottom	6.450

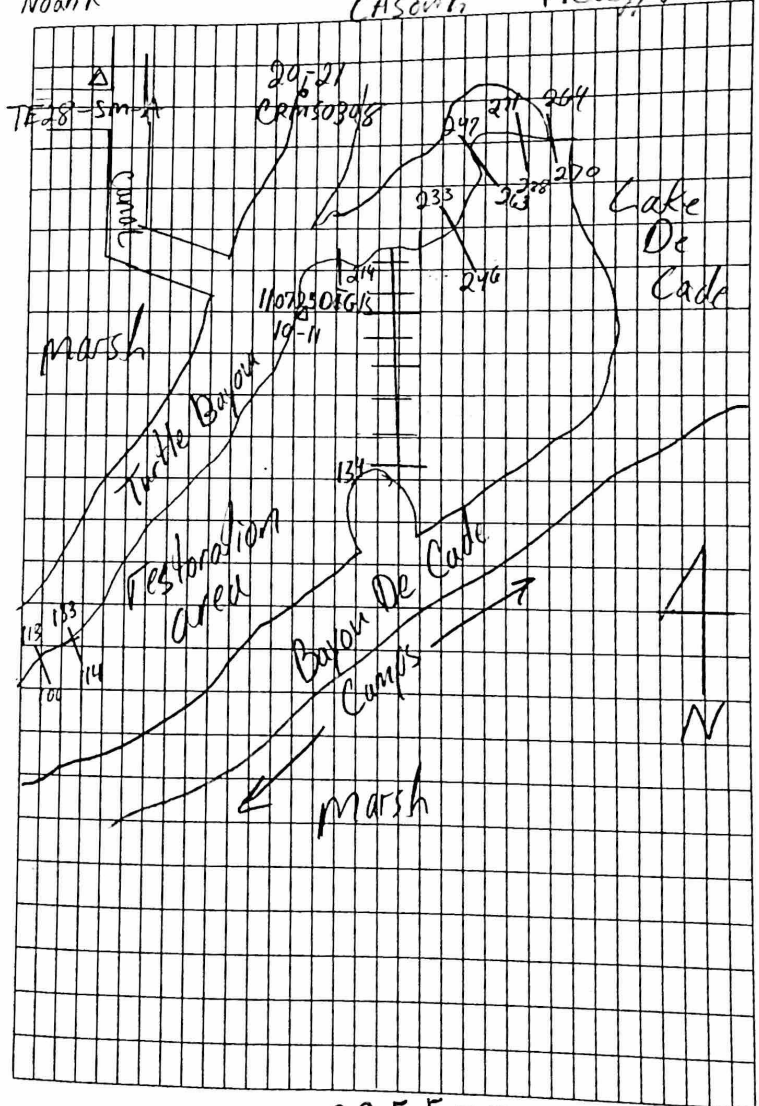
-Logged on TE28-SM-A from 7:50 AM - 3:19 PM

8355--

Bryant R
Noah R

Airboat
Geoid 128
LA Seville

11/08/2023
Ptidaly/Worm
43



8355--

Job: 223198900c

File: 110823DTG

Coastal Protection & Restoration Authority
Bayou De Cade Ridge Restoration
Bayou De Cade
Terrebonne Parish, LA

Set RS base on TE285M01-A with
two meter fixed height tripod.

Checked on 110723DTG15. HI = 2m
H. Dist = 0.081 V. Dist = 0.070

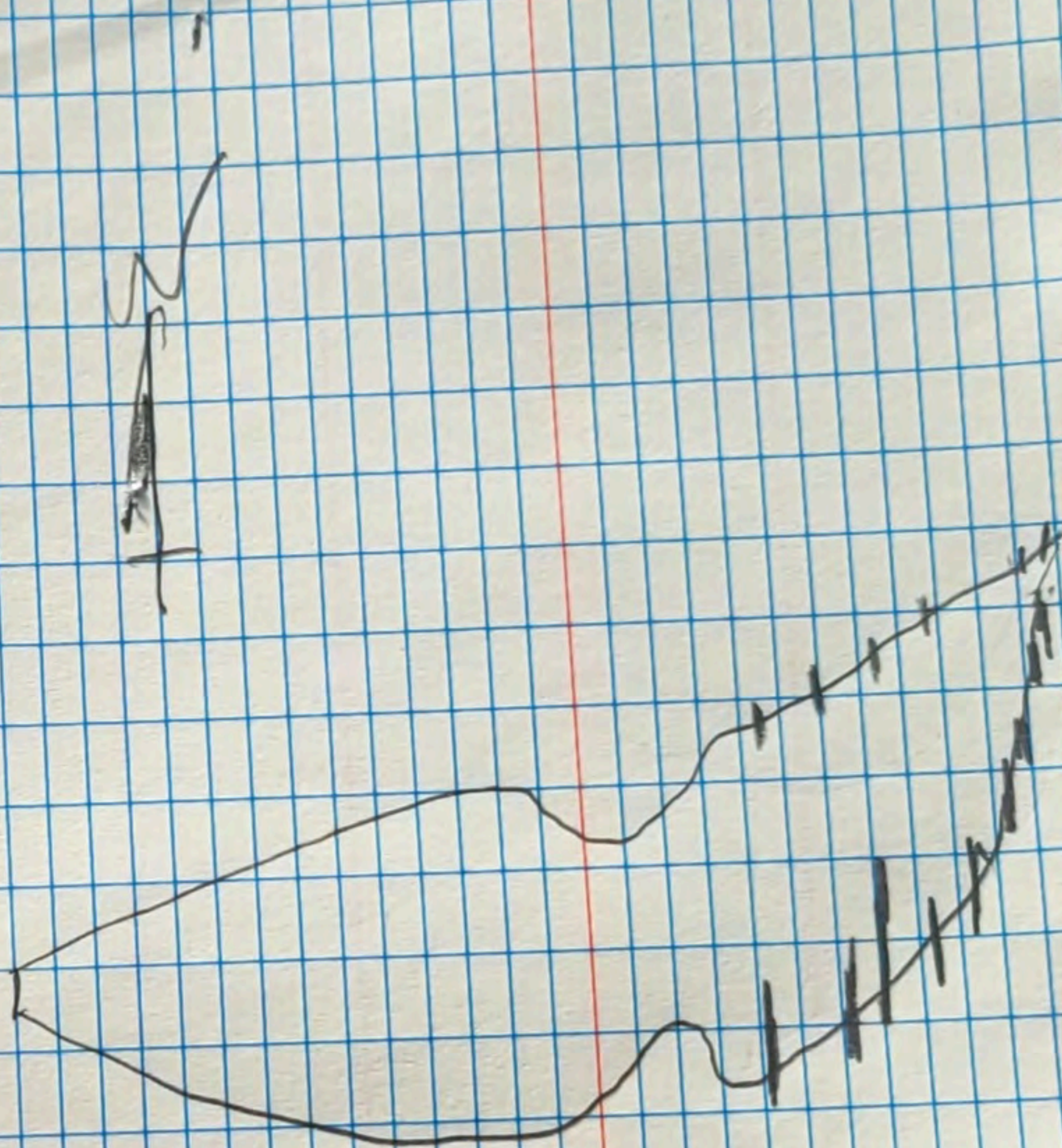
CRMS	0398	Staff Gauge	
PM AM	Gauge = 0.98	RTK = 0.784 @	3:12 p.m.
AM PM	Gauge = 0.88	RTK = 0.751 @	8:03 a.m.

PL	HI	Code	Desc
30-31	6.562	CP-CHK	110723DTG15
300-301	6.280	WATER-TOP	
300- ³⁰¹² 3137	6.562	NG	WOODED AREA
3013-3137	6.280	NG, LEVEE, WATERBODY	

David G.
Christ F.

Amel 213
BB 13

11/08/23
Warm Sunny



FILE: 110823WB

JOB# 2236989.000

CPRA

BAYOU DE CADE RIDGE RESTORATION

TERREBONNE PARISH, LA

(RTK) R? BASE - RUNNING OFF OF DAVID
G. BASE

R: 39.32 POINT ON A 2" POLE CHECK @ TE34-SM-01

A H: .046 A V: -0.128

CP120398 STAFF GAGE READINGS

AM → .880 ; ELEV: 0.706

PM → .78 ; ELEV: 0.788

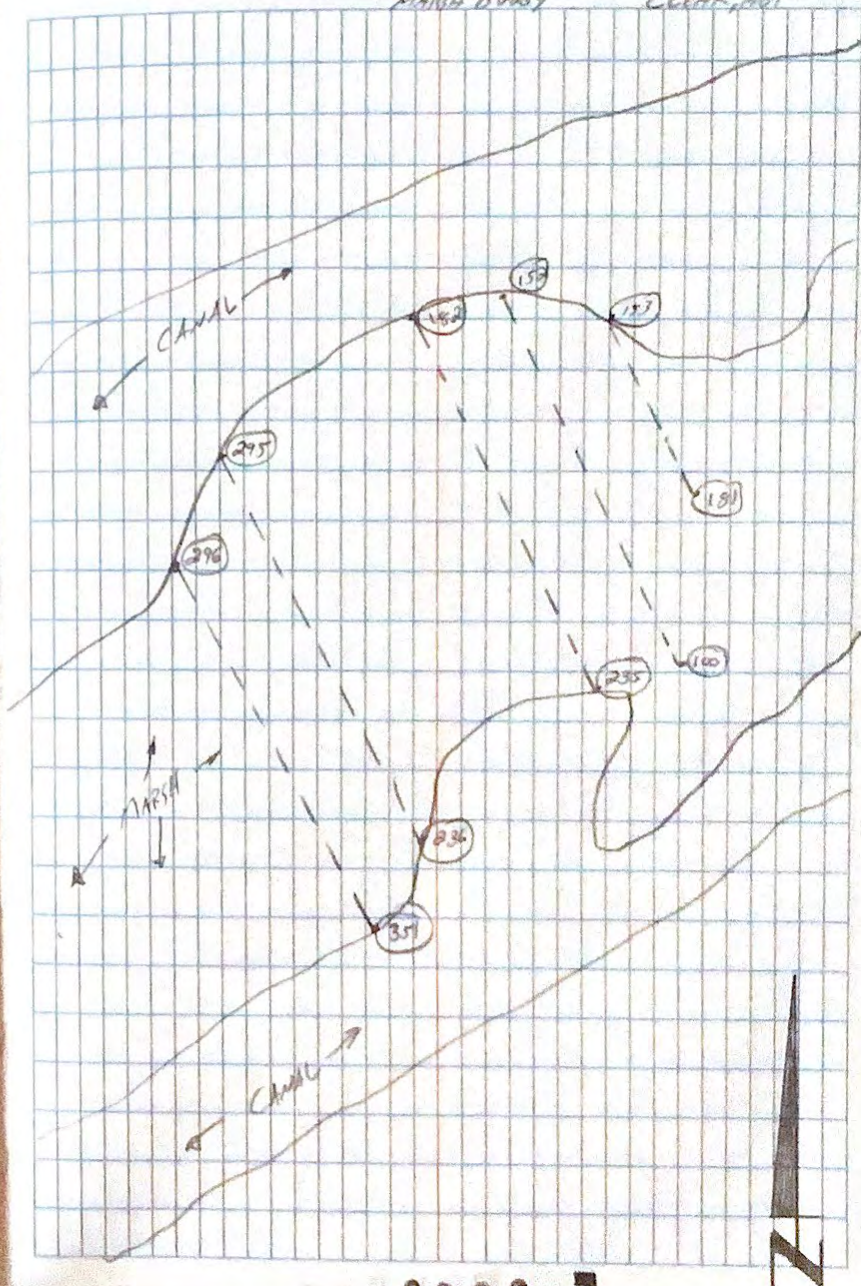
PTS	DESCRIPTION
# 1.2	TOP H2O @ GAGE
# 10.1	CHECK @ TE34-SM-01

J. BREANX
of DOWNEY

11/08/23

RTK/185
MARCH BUGGY

CLEAR, HOT



44 Job # 2226989.00c File: 110923BR

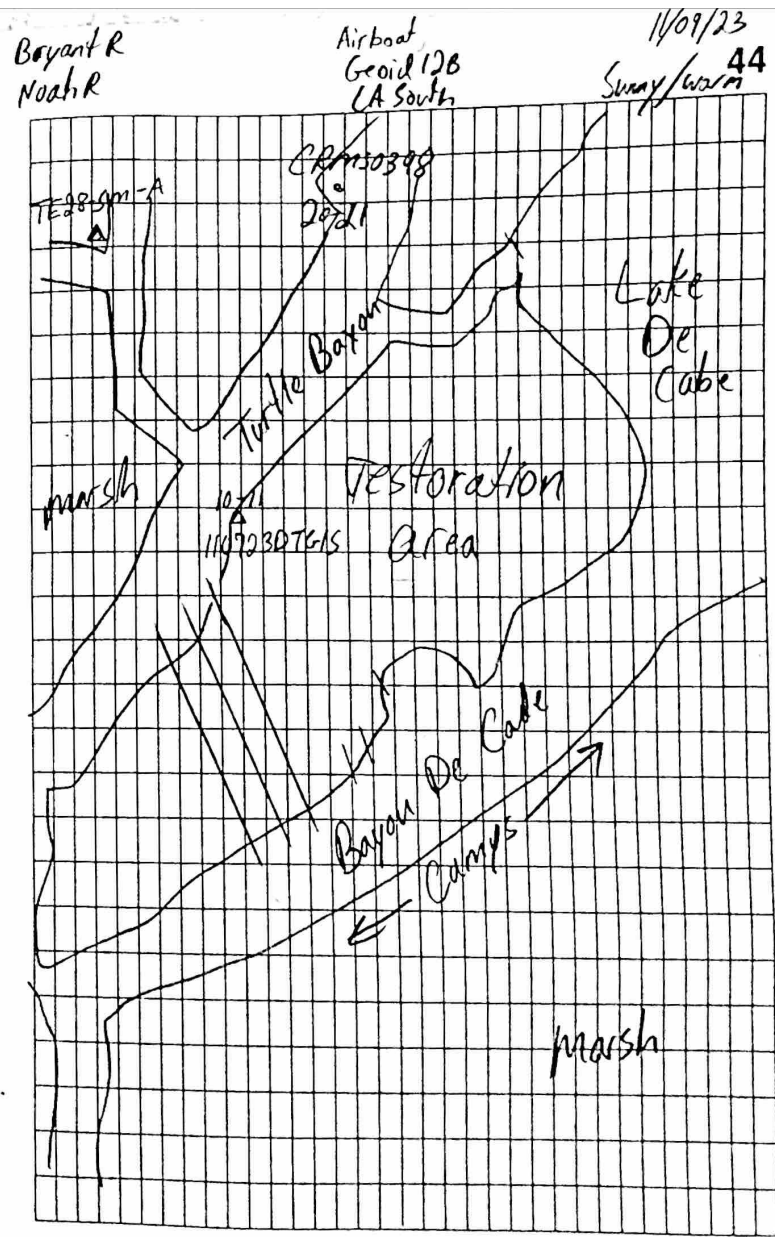
CPRA
Bayou De Cabe ridge restoration
Terrebonne Parish LA

RTK R-10 Base on 2M Fixed Tripod @ TE28-sm-A
R-8s cover on 2m pole check @ 110923DTG1S
H: 0.041 V: -0.156
CRMS0398 Staff gauge reading
7:52 AM reading 0.91 Elev: 0.780
11:09 AM reading 0.79 Elev: 0.665

PT	Code	Description	H.I
10-11	CP-CHK	110923DTG	6.562
20-21	Water	Top of Water	6.562
100-122	Water No level	bottom, N/S, Slope, Crown, CL	6.450
123-301	Water No level	bottom, N/S, Slope, Crown, CL	6.450
302-337	Water No level	bottom, N/S, Slope, Crown, CL	6.450

Logged on TE28-sm-A From 7:37 AM to 11:16 PM

8355--



8355--