TOPOGRAPHIC AND BATHYMETRIC SURVEYS OF NRDA – CHENIER RONQUILLE BARRIER ISLAND RESTORATION (BA-0076) PROJECT PLAQUEMINES PARISH, LOUISIANA

DATA COLLECTION REPORT

Prepared for:
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CPRA
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NRDA – CHENIER RONQUILLE BARRIER ISLAND RESTORATION (BA-0076) PROJECT

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TOPOGRAPHIC AND BATHYMETRIC SURVEY
DATA COLLECTION REPORT

NRDA – CHENIER RONQUILLE BARRIER ISLAND RESTORATION (BA-0076) PROJECT

1.0 PROJECT OVERVIEW

T. Baker Smith, LLC (TBS) was tasked to provide professional services in support of Topographic and Bathymetric Surveys for the NRDA – Chenier Ronquille Barrier Island Restoration (BA-0076) Project as outlined in the Scope of Services dated July 2025 provided by the CPRA. The BA-0076 project is located 9.5 miles east-northeast from the eastern tip of Grand Isle near Quatre Bayou Pass in Plaquemines Parish. The approximate coordinates of the center of the project area are: 29° 19' 03.6" N and 89° 48' 28.0" W NAD83 (2011). Survey data was collected along thirty-four (34) previously established (north-south) transects five (5) previously established east-west transects, and seven (7) settlement plate locations using Real Time Kinematic (RTK) methods.

2.0 DATA COLLECTION SUMMARY AND SURVEY METHODOLOGY

2.1 PERMISSION AND ACCESS

Before any field work commenced, CPRA obtained access permission from the landowners within the project site for TBS. TBS field crews began data collection during September 2025 through November 2025 using dual outboard marine vessels (M/V) and airboats for marine transportation throughout the project area as specified in the Scope of Services provided by the CPRA dated July 2025.

2.2 SURVEY CONTROL AND DATUM INFORMATION

TBS survey crews began their survey of the project by recovering existing secondary monument "CRMSBA-SM-20" to establish updated horizontal and vertical for this survey task. The "CRMSBA-SM-20" monument is part of the Louisiana Coastal Zone (LCZ) Secondary GPS Network and is located near middle of existing island and accessible by airboat. Static data was collected at "CRMSBA-SM-20" for the duration of the project and was sent out to OPUS and used to validate the horizontal and vertical positions as shown on the datasheet for "CRMSBA-SM-20". In addition to the OPUS solutions, static data from this monument was processed into a GPS network adjustment with secondary monument "BA40-SM-01" and temporary benchmark "TBM-CP01" (located nearby on Shell Island). Static data gathered from monuments "BA40-SM-01" and "TBM-CP01" were collected simultaneously with "CRMSBA-SM-20" as part of another task. All positions presented in this report and in the final deliverables dataset are based on the final values generated from the provided datasheet for "CRMSBA-SM-20", Trimble Business Center (TBC) network adjustments, average OPUS values, and Real-Time Kinematic (RTK) survey

methods. The datasheet values provided for this project and OPUS solutions comparison table are shown in Appendix "B". Below is a comparison table depicting the differences in northing, easting, and elevation between the average OPUS, network adjustment, and the provided datasheet:

HORIZONTAL AND VERTICAL DELTA FOR CRMSBA-SM-20			
NAD 83 (2011) - Louisiana State Plane Coordinate System, South Zone (1702), U.S. Survey feet			
Measurement	**Easting**	**Northing**	**Elevation (NAVD88, Geoid 12B)**
Datasheet Value	3774247.964	300238.977	2.07
Network Adjusted Value	3774247.978	300238.999	2.06
Average OPUS Value	3774247.976	300239.038	2.05
Δ Datasheet-Network Adjustment	**-0.014**	**-0.022**	**0.01**
Δ Datasheet-Average OPUS	**-0.012**	**-0.061**	**0.02**

All Data collection and processing was performed following applicable guidelines set forth in Sections D and F of *"A Contractor's Guide to the Standards of Practice for CPRA Contractors Performing GPS Surveys and Determining GPS Derived Orthometric Heights within the Louisiana Coastal Zone", July 2019 version.* The GNSS Static Network Sessions completed for these control points are shown in Exhibit "B". For efficiency, all static data was collected in during the RTK Topographic and Bathymetric Surveys. The GNSS Static Network Sessions collected are shown on an overall map in Appendix "B".

2.3 RTK TOPOGRAPHIC AND BATHYMETRIC SURVEYS

TBS performed topographic surveys from September 2, 2025 through November 15, 2025 along the planned transects provided by CPRA and shown on the project site maps in Appendix "A". Surveys were conducted using Global Navigation Satellite System (GNSS) Real-Time Kinematic (RTK) methods. The project site was accessed by airboat and by a dual-outboard survey vessel. Field crews walked the land portions and shallow water areas of the transects and used the vessels to collect data along the deeper water portions. Position, elevation, and water-depth measurements were recorded at twenty-five (25) foot intervals along each transect. A 0.5-foot diameter metal plate was attached to the bottom of the survey rod to prevent rod penetration into soft soils. Topographic survey data were downloaded from the Trimble TSC-7 data collector into Trimble Business Center (TBC) for processing. TBC was used to conduct QA/QC of the GPS data, including checks for instrument setup errors, antenna height issues, and other potential blunders. RTK topographic data collection was performed in conjunction with bathymetric survey operations. Topographic and bathymetric datasets overlapped at the land/water interface. These overlap zones facilitated the merging of datasets and supported QA/QC of all collected transect data.

Bathymetric surveys were conducted along the same transects on September 16–19, 2025 from the M/V Hydro 1. A base station was set on project control to provide real-time GPS

corrections to the survey vessel. Water-surface elevations were periodically observed during each survey day for data and equipment QA/QC. Daily equipment checks were performed before and after each survey, including verification of depth readings and sound-velocity measurements. The average sound velocity measured during the project was 5,022 ft/s. Bathymetric data was processed using HYPACK's Single Beam Editor. The processing workflow included verifying instrument offsets, reviewing tide information against the top-of-water elevations collected during the project, and removing obvious outlier points. Sounding data was compared where transect intersections occurred. The mean difference between intersecting transect soundings was 0.158 feet, with a standard deviation of 0.20feet.

Top-of-water elevations were collected throughout the duration of the project for both topographic and bathymetric portions; a summary table of project water levels is provided in Appendix "C". The average top of water elevation during this survey task was 0.7' (NAVD, Geoid 12B).

2.4 SETTLEMENT PLATES SURVEY

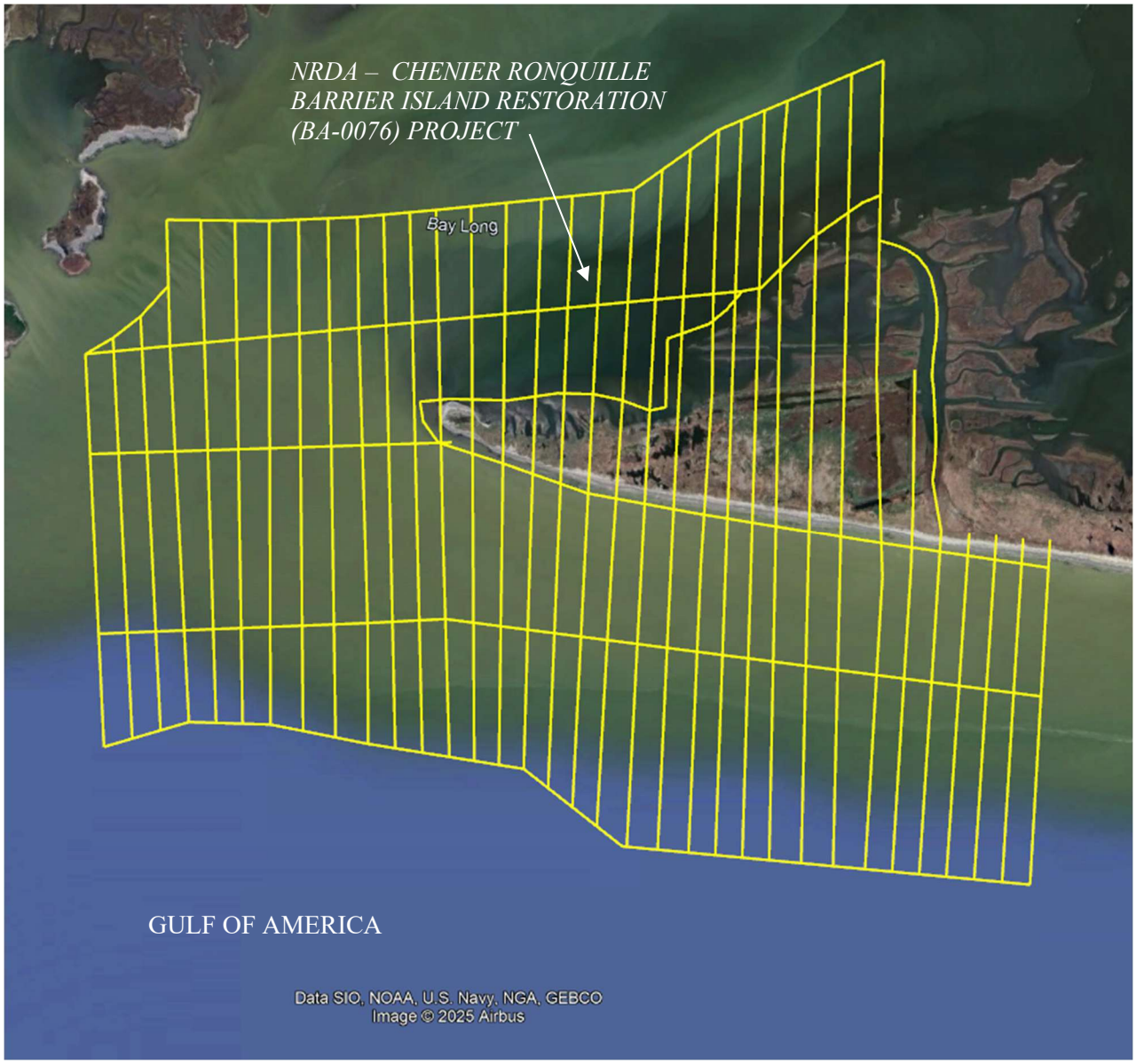
CPRA provided positions of ten (10) settlement plates for TBS to survey. One (1) of the settlement plates, "SP-06" appears to have been removed or destroyed; therefore, no data on this settlement plate was collected. TBS surveyed the positions of seven (7) existing settlement plates using RTK methods and a tape measure. At each location, TBS found the existing settlement plate and obtained ground elevations at a minimum of 4 locations (cardinal directions), top of pipe, and top of collar elevations of the settlement plates. No collars were found on settlement plates SP-05 and SP-08. The top of pipe and top of collar elevations are shown in the table on the following page. Many settlement plates were leaning; notable are SP-02 leaning to the east, SP-04 leaning northwest, and SP-10 leaning northwest. Field notes and digital photographs were taken to document all the settlement plate site conditions and can be found in the digital appendix. The updated location for the settlement plates, as surveyed, is shown in the table on the following page and on the project drawing deliverables in Appendix "D".

CHENIER RONQUILLE (BA-0076) - SETTLEMENT PLATES

PLATE NUMBER	SPCS NAD83 (2011), LOUISISANA SOUTH ZONE (1702) COORDINATES, US SURVEY FEET				TOP OF PIPE	** TOP OF COLLAR	NATURAL GROUND ELEVATION AT SETTLEMENT PLATE				
	NORTHING	EASTING	LATITUDE	LONGITUDE			NORTH	EAST	SOUTH	WEST	AVERAGE
*SP-01	--	--	--	--	--	--	--	--	--	--	--
SP-02	300,600.64	3,767,009.15	29°19'03.6318''	89°48'28.0029''	8.06'	6.78'	4.02'	3.70'	3.98'	4.32'	4.00'
*SP-03	--	--	--	--	--	--	--	--	--	--	--
SP-04	300,592.12	3,769,014.82	29°19'03.2826''	89°48'05.3495''	8.18'	4.65'	2.78'	2.63'	2.61'	2.81'	2.71'
SP-05	301,437.05	3,769,502.35	29°19'11.5828''	89°47'59.7153''	10.07'	**	-1.14'	-1.13'	-1.16'	-1.13'	-1.14'
*SP-06	--	--	--	--	--	--	--	--	--	--	--
SP-07	300,519.60	3,771,008.29	29°19'02.3008''	89°47'42.8450''	10.64'	6.98'	3.45'	3.45'	3.47'	3.31'	3.42'
SP-08	301,756.61	3,772,007.19	29°19'14.4131''	89°47'31.3747''	9.27'	**	3.18'	3.56'	3.73'	3.14'	3.40'
SP-09	299,204.10	3,773,008.90	29°18'49.0122''	89°47'20.4482''	11.57'	-0.63'	-2.21'	-2.01'	-1.78'	-2.28'	-2.07'
SP-10	300,637.35	3,773,012.48	29°19'03.1986''	89°47'20.1891''	8.40'	5.20'	1.40'	1.45'	1.42'	1.45'	1.43'
(* INDICATES SETTLEMENT PLATE NOT FOUND)											
(** NO COLLARS PRESENT ON SETTLEMENT PLATES)											

APPENDIX "A"

Overall Project Site Map



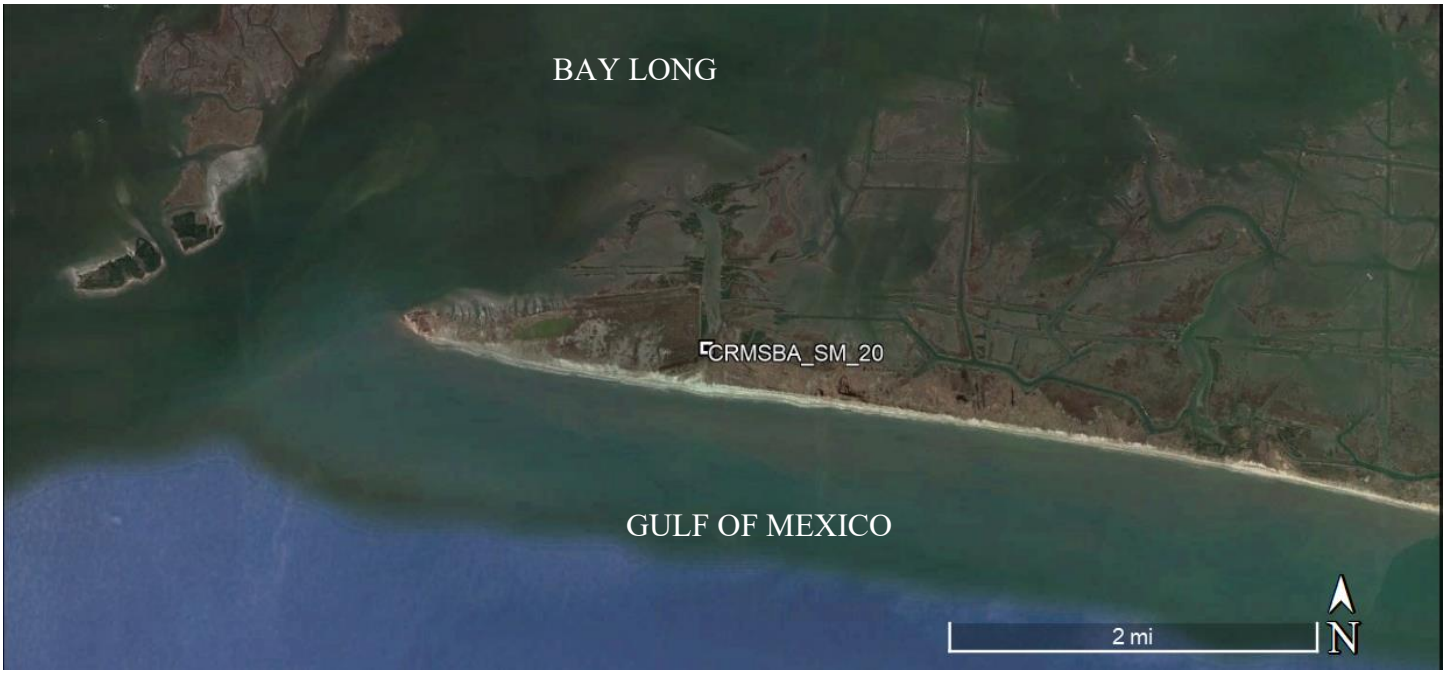
Overall Project Site Map

Coastal Protection and Restoration Authority

NRDA – Chenier Ronquille Barrier Island Restoration (BA-0076) Project
Plaquemines Parishes, Louisiana

APPENDIX "B"

Overall Project Control



VICINITY MAP

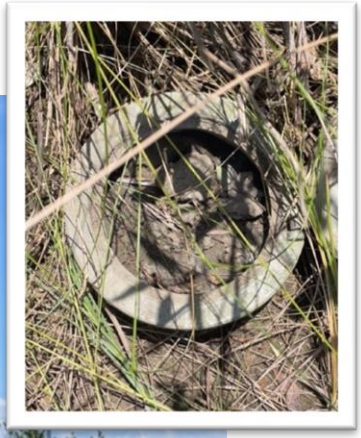
Reproduced from Google Earth

Station Name: CRMSBA-SM-20

Monument Location: By boat from Joshua's Marina in Buras, LA, go southwest approximately 1.4 miles into Bay Pomme D`Or. Cross the bay and continue south approximately 1.2 miles into Cyprian Bay. Go southeast approximately 1.7 miles into the bay to the mouth of Scofield Bay to the west. Follow Scofield Bay into Scofield Bayou for approximately 3.5 miles to the shore of the Gulf of Mexico. Go west along the shoreline for approximately 11.5 miles to a canal. Go north along this canal for approximately 3700 feet to the monument set on the west side of this canal.

Monument Description: Monument is a 9/16" stainless steel rod driven to refusal set within a floating sleeve and 6" PVC pipe filled with sand set in concrete with an access cover.

Monument Established By: Chustz. **Stamping:** "CRMSBA-SM-20"



Date Surveyed: June 2022

Reference Frame: NAD83 (2011) epoch 2010.00

Geodetic Position:

Lat. = 29° 18' 59.0907" N
Long. = 89° 47' 06.2957" W
Ellipsoid Height = -23.338 (mtrs.)

SPCS, Louisiana South Zone (1702), US Survey Feet

N= 300,238.98
E= 3,774,247.96

UTM (zone 15N) Coordinates, Meters

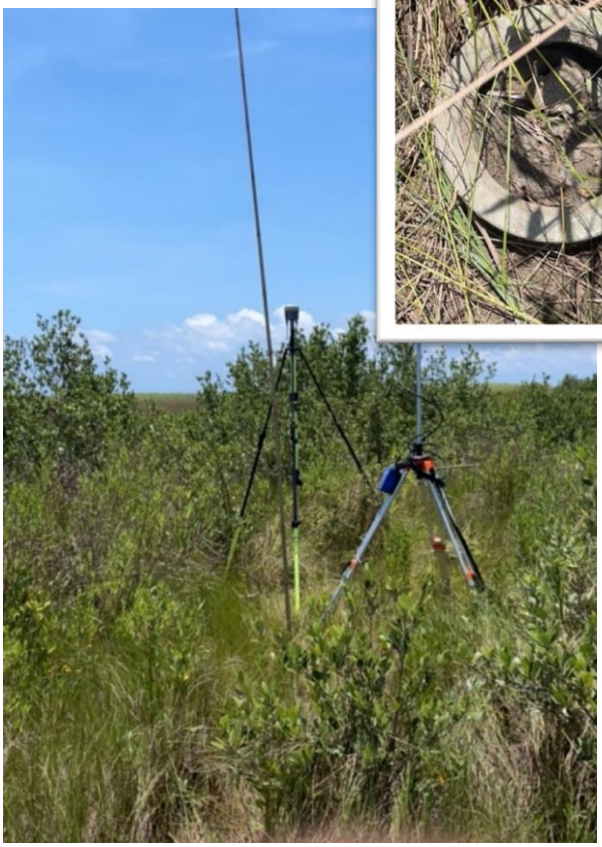
N= 3,247,334.756
E= 812,260.279

NAVD88 (Geoid 12B) Adjusted Height:

Elevation = 2.07 feet (0.630 mtrs.)
Geoid Height = (-23.968 mtrs.)

2017 Datasheet Positions:

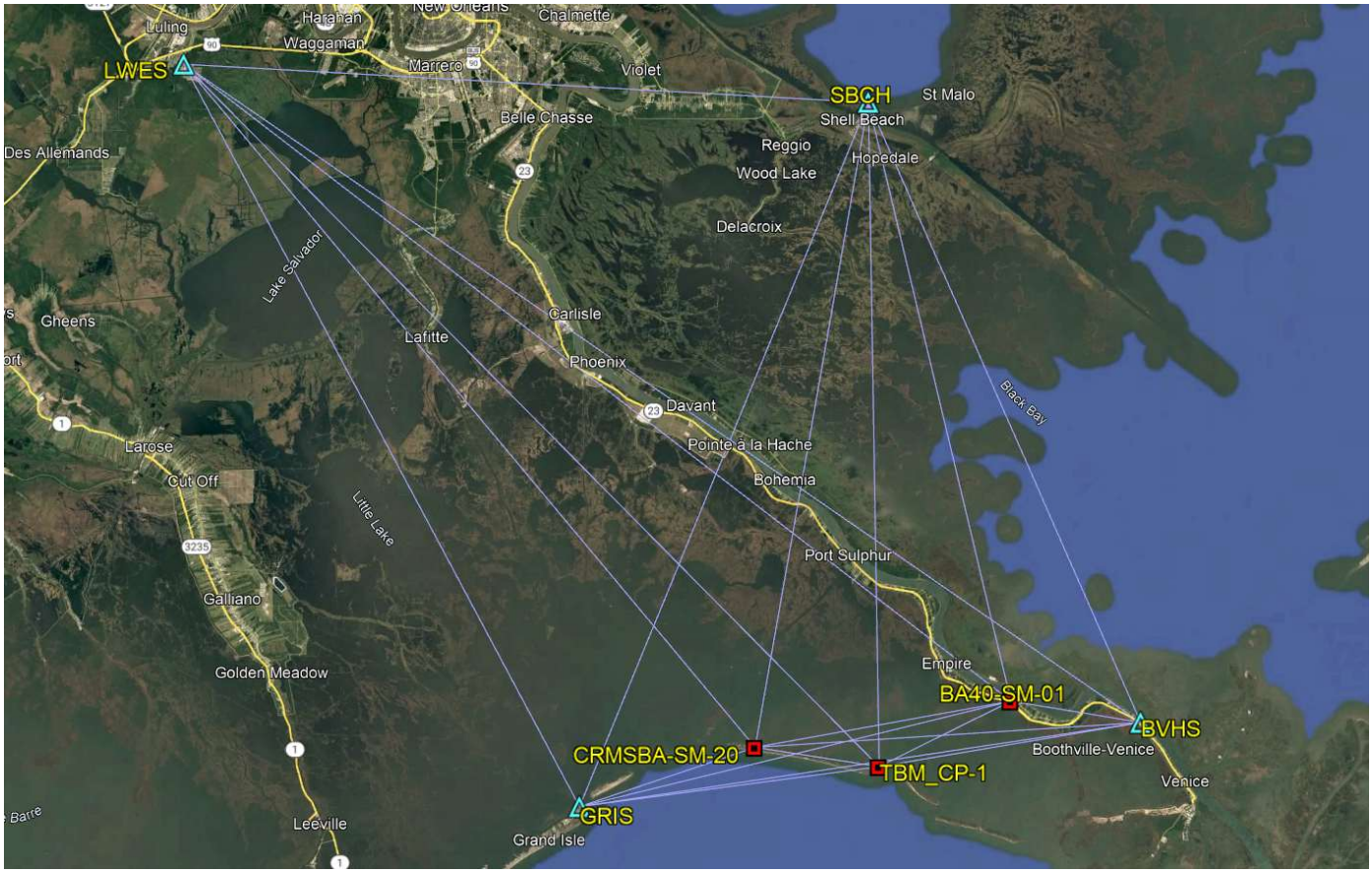
Elevation (Geoid12B) = 2.344 feet (0.714mtrs.)
Ellipsoid Height = (-23.254 mtrs.)
Geoid12B Height = (-23.968 mtrs.)



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

Datasheet Control Value to Static Solutions Comparison Table NAD 83 (2011) - Louisiana State Plane Coordinate System, South Zone (1702), U.S. Survey feet									
Measurement	**Monument Observed**	**Static File**	**Duration**	**Easting**	**Difference**	**Northing**	**Difference**	**Elevation (NAVD88, Geoid 12B)**	**Difference**
Datasheet Value	**CRMSBA_SM_20**			**3774247.964**		**300238.977**		**2.068**	
average static data value (OPUS)	CRMSBA_SM_20			3774248.046	0.082	300238.983	0.006	2.007	-0.061
static data - 09-04-25	CRMSBA_SM_20	01102472.T04	7:17:00	3774248.023	0.059	300238.953	-0.024	1.929	-0.139
static data - 09-05-25	CRMSBA_SM_20	01102480.T04	4:31:00	3774248.078	0.114	300238.975	-0.002	1.903	-0.165
static data - 09-15-25	CRMSBA_SM_20	13242581.T04	4:57:00	3774248.056	0.092	300239.008	0.031	1.998	-0.070
static data - 09-16-25	CRMSBA_SM_20	13242590.T04	5:42:00	3774248.036	0.072	300238.987	0.010	2.017	-0.051
static data - 09-17-25	CRMSBA_SM_20	13242600.T04	7:16:00	3774248.062	0.098	300239.003	0.026	2.080	0.012
static data - 09-18-25	CRMSBA_SM_20	13242612.T04	7:50:00	3774248.044	0.080	300238.981	0.004	2.099	0.031
static data - 09-19-25	CRMSBA_SM_20	13242621.T04	4:53:00	3774248.014	0.050	300238.977	0.000	2.054	-0.014
static data - 09-23-25	CRMSBA_SM_20	13242664.T04	5:55:00	3774248.052	0.088	300238.983	0.006	1.978	-0.090

Project Control Values – Comparisons Table



GNSS Static Network Sessions

APPENDIX "C"

Project Water Level Data Table

NRDA CHENIER RONQUILLE BARRIER ISLAND RESTORATION (BA-0076) Project Water Level Data				
Northing	Easting	Date	Time	Top of Water Elevation (Geoid 12B)
300770.992	3774355.372	9/3/2025	15:42	1.28
300928.157	3766986.156	9/4/2025	8:29	1.67
300946.956	3767800.983	9/4/2025	10:09	1.46
300761.269	3767029.315	9/4/2025	14:48	0.38
301263.451	3765750.527	9/5/2025	9:14	1.40
301170.387	3767345.767	9/5/2025	9:58	1.41
301139.364	3768634.164	9/5/2025	11:06	1.35
305752.395	3778613.926	9/16/2025	10:15	0.77
303153.434	3760741.033	9/16/2025	12:42	0.14
304600.062	3764175.734	9/16/2025	14:46	-0.09
305750.820	3778615.019	9/17/2025	8:05	1.13
297421.861	3775167.737	9/17/2025	11:23	0.43
305754.126	3778611.997	9/17/2025	15:11	-0.12
305750.041	3778614.352	9/18/2025	7:57	1.24
304031.528	3772253.502	9/18/2025	11:30	0.98
305752.763	3778613.888	9/18/2025	15:30	0.32
305750.576	3778613.930	9/19/2025	7:43	1.18
302475.637	3773423.090	9/22/2025	10:07	0.45
302237.452	3772238.422	9/22/2025	15:31	0.77
299213.009	3773005.795	9/23/2025	8:06	0.22
301737.476	3771630.620	9/23/2025	9:11	0.40
301436.724	3765749.772	9/23/2025	11:06	0.44
300606.948	3774265.177	9/23/2025	13:16	0.58
305723.315	3778590.459	10/15/2025	9:58	0.49
301112.671	3765656.967	10/15/2025	12:08	0.19
305084.651	3773381.056	10/15/2025	12:56	0.18
AVERAGE TOP OF WATER ELEVATION				0.72

APPENDIX "D"

Project Drawings

NRDA – Chenier Ronquille Barrier Island Restoration (BA-0076) Project