EUSTIS ENGINEERING SINCE 1946

LOG OF BORING AND TEST RESULTS

Ducks Unlimited, Inc.
Pierce Marsh Beneficial Use
Marsh Creation
Phase 1
North of West Bay Near Galveston Island
Galveston County, Texas

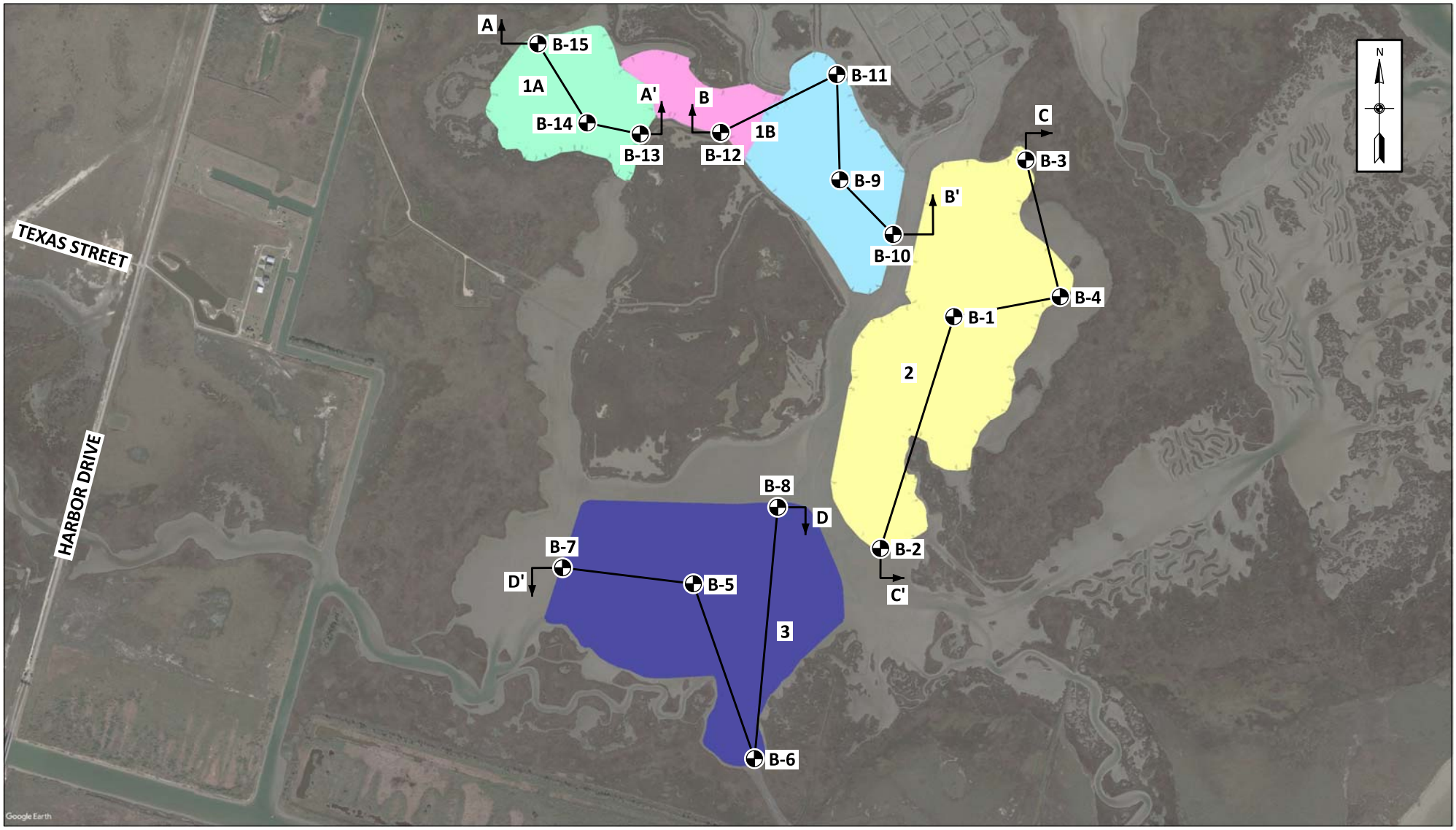
Boring: B-11

Project No: H0048
Date: 07/13/2022
Latitude: 29.32037°
Longitude: -94.96386°

Water Depth: See Text
Total Depth: 40.0 ft

Scale in Feet	PP	SPT	SPLR	Symbol	Visual Classification	USC	Sample Number	Depth in Feet	Water Content %	Density Dry pcf	Density Wet pcf	Shear Tests Type	Shear Tests ϕ	Shear Tests C psf	Atterberg Limits LL	Atterberg Limits PL	Atterberg Limits PI	Other Tests
0	0.50				Moist, soft gray & tan FAT CLAY w/few fine sand pockets	CH	1A	0	50									
							1B	1	49						86	26	60	
	0.50						2A	2	68									
							2B	3	63									
							3A	4	66									
5	0.50				w/few fine sand pockets & concretions		3B	5	59	65	104	OB	0	296				
					Moist, stiff to very stiff red, gray, & tan FAT CLAY	CH	4A	6	51									
	1.00				w/trace of organic matter		4B	7	51									
							5A	8	41									
	1.00						5B	9	41									
10							6A	10	37									
	1.00				Moist, medium stiff reddish-brown FAT CLAY w/trace of concretions	CH	6B	11	36	85	116	OB	0	849				
							7A	12	37									
	1.00				Moist, stiff to very stiff red, brown, & gray FAT CLAY w/trace of gravel	CH	7B	13	34						79	23	56	
					w/trace of organic matter		8A	14	38									
15	1.00				w/few fine sand pockets		8B	15	33									
							9A	16	32									
	1.00				Moist, medium stiff to stiff reddish-brown, gray, & tan FAT CLAY w/few fine sand lenses & layers	CH	9B	17	26	99	124	OB	0	953				
							10A	18	30									
	1.00				w/trace of organic matter		10B	19	26									
20					w/trace of organic matter & fine sand													
							11A	23	24									
	1.00				w/few concretions		11B	24	28	96	123	OB	0	773				
25																		
							12A	28	27									
	1.00						12B	29	26	100	125	OB	0	890				
30																		
					Moist, medium stiff to stiff tan & gray LEAN CLAY w/few organic matter	CL	13A	33	34									
	1.00						13B	34	29						42	21	21	
35																		
							14A	38	30									
	1.00						14B	39	32	90	119	OB	0	993				
40																		
45																		
50																		

NOTES: Boring B-11 was drilled in 1 ft. 6 in of water.



SATELLITE IMAGERY DATED: JANUARY 2022

NOT TO SCALE

◓ DENOTES APPROXIMATE LOCATIONS OF SOIL BORINGS DRILLED BETWEEN 11 AND 18 JULY 2022

BORING LOCATION PLAN

PHASE 1
DUCKS UNLIMITED, INC.
PIERCE MARSH BENEFICIAL USE MARSH CREATION
NORTH OF WEST BAY NEAR GALVESTON ISLAND
GALVESTON COUNTY, TEXAS
DU CONTRACT NO. TX-0-2
DU PROJECT NO. TX-194-4
DU TASK ORDER NO. 1

EUSTIS ENGINEERING L.L.C. SINCE 1946

DRAWN BY: S.T.S.	JOB NO.: H0048
CHECKED BY: H.C.W.	DATE: 15 AUG 2022
CADD FILE: LOCATION PLAN.DGN	FIGURE 2

B

B-12
G.S.E. -0.27
13 JUL 2022

B-11
G.S.E. 1.29
13 JUL 2022

B-9
G.S.E. -0.88
14 JUL 2022

B-10
G.S.E. -0.90
14 JUL 2022

B'

ELEVATION IN FEET (NAVD 88)

10
0
-10
-20
-30
-40
-50
-60

BORING MATERIAL GRAPHICS

- FAT CLAY
- SILT
- CLAYEY SILT
- LEAN CLAY

NOTE:

1. G.S.E. = GROUND SURFACE ELEVATION

SUBSURFACE SOIL PROFILE
MCA-1B
PHASE 1
DUCKS UNLIMITED, INC.
PIERCE MARSH BENEFICIAL USE MARSH CREATION
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EUSTIS ENGINEERING L.L.C. SINCE 1946

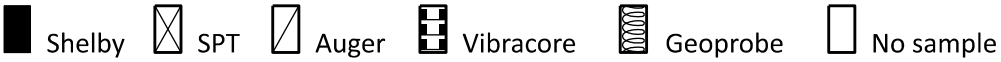
DRAWN BY: S.T.S.	JOB NO.: H0048
CHECKED BY: H.C.W.	DATE: 23 AUG 2022
CADD FILE: PROFILE.DGN	FIGURE 3 (SHEET 2 OF 4)

EUSTIS ENGINEERING SINCE 1946

LEGEND AND NOTES FOR LOG OF BORING AND TEST RESULTS

PP Pocket penetrometer: Resistance in tons per square foot

SPT Standard Penetration Test: Number of blows of a 140-lb hammer dropped 30 inches required to drive 2-in. O.D., 1.4-in. I.D. sampler a distance of 1 foot into the soil after first seating it 6 inches. Values shown have not been corrected.

SPLR Type of Sampling  Shelby, SPT, Auger, Vibracore, Geoprobe, No sample

SYMBOL Clay, Silt, Sand, Peat/Humus, Shells, Stone/Gravel

Predominant type shown heavy; modifying type shown light

USC Unified Soil Classification

DENSITY Unit weight in pounds per cubic foot

SHEAR TESTS

TYPE

- UC Unconfined compression shear
- OB Unconsolidated undrained triaxial compression shear on one specimen confined at the approximate overburden pressure
- UU Unconsolidated undrained triaxial compression shear
- ϕ Angle of internal friction in degrees
- c Cohesion in pounds per square foot

ATTERBERG LIMITS

- LL Liquid Limit
- PL Plastic Limit
- PI Plasticity Index

OTHER TESTS

- CON Consolidation
- -#200 Percent passing a U.S. No. 200 sieve
- SV Particle size distribution (sieve only)
- PD Particle size distribution (sieve and hydrometer)
- k Coefficient of permeability in centimeters per second
- SP Swelling pressure in pounds per square foot

Other laboratory test results reported on separate figures

GENERAL NOTES

(1) If a ground water depth is shown on the boring log, these observations were made at the time of drilling and were measured below the existing ground surface. These observations are shown on the boring logs. However, ground water levels may vary due to seasonal fluctuations and other factors. If important to construction, the depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.

(2) While the individual logs of borings are considered to be representative of subsurface conditions at their respective locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.