LOG OF BORING AND TEST RESULTS

EUSTIS ENGINEERING SINCE 1946

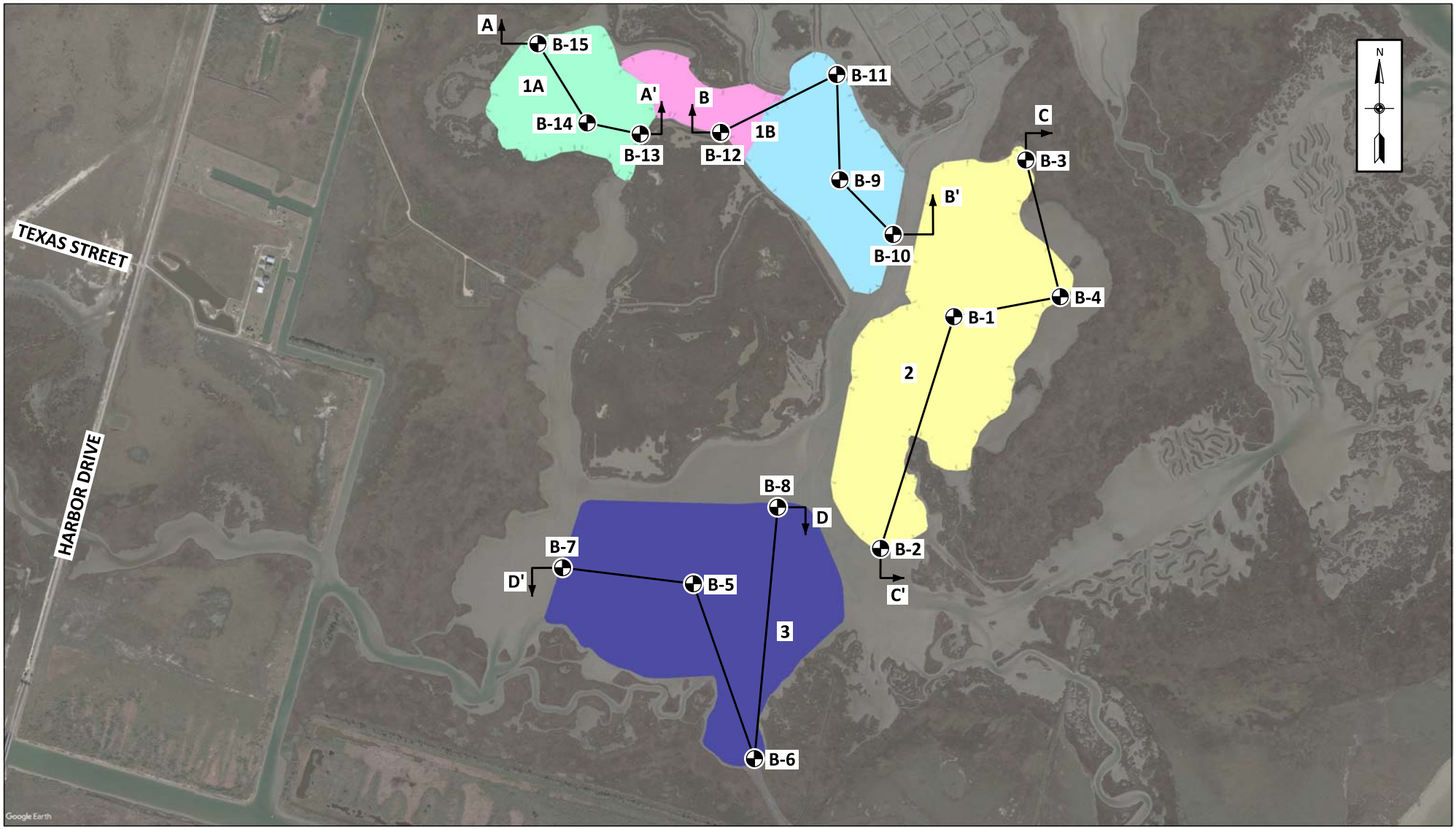
Ducks Unlimited, Inc.
Pierce Marsh Beneficial Use
Marsh Creation
Phase 1
North of West Bay Near Galveston Island
Galveston County, Texas

Boring: B-15

Project No: H0048
Date: 07/11/2022 - 07/12/2022
Latitude: 29.32114°
Longitude: -94.97246°
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, medium stiff to stiff dark gray & brown LEAN CLAY w/trace of concretions & organic matter	CL	1A	0	27	97	123	OB	0	664				
							1B	1										
	1.00						2A	2	30									
							2B	3	24						49	18	31	
					Wet, soft gray LEAN CLAY	CL	3A	4	36									
5	1.00				Moist, soft gray & tan FAT CLAY w/trace of fine sand pockets & concretions	CH	3B	5	24	103	127	OB	0	304				
							4A	6	22									
	1.00				Moist, very stiff brownish-red, & gray LEAN CLAY w/gravel & concretions	CL	4B	7	19									
							5A	8	25									
	1.00				Moist, medium stiff to stiff red, brown, & gray FAT CLAY w/trace of concretions & organic matter	CH	5B	9	29						62	20	42	
10							6A	10	33									
	1.00						6B	11	37	86	117	OB	0	597				
					Moist, very stiff gray & brown LEAN CLAY	CL	7A	12	36									
	1.00				Moist, very stiff to extremely stiff brown & gray FAT CLAY w/organic matter	CH	7B	13	37									
							8A	14	37									
15	1.00						8B	15	34									
							9A	16	24									
	1.00				Moist, stiff tan, brown, & gray FAT CLAY	CH	9B	17	28						60	18	42	
							10A	18	27									
	1.00				Moist, very stiff brown LEAN CLAY w/concretions	CL	10B	19	29	95	123	OB	0	594				
20					Moist, medium stiff red, brown, & gray FAT CLAY w/trace of concretions	CH												
							11A	23	34									
	1.00				Wet, medium stiff red, brown, & gray LEAN CLAY w/gravel	CL	11B	24	27									
					Moist, stiff tan SANDY LEAN CLAY	CL												
25																		
							12A	28	29									
	1.00				Moist, stiff to very stiff tan, gray, & brown FAT CLAY w/organic lenses w/trace of silt pockets & lenses, & trace of concretions	CH	12B	29	33	89	119	OB	0	1016				
30																		
							13A	33	36									
	1.00						13B	34	40									
35																		
							14A	38	37									
	1.00				Moist, medium stiff brown LEAN CLAY w/gravel	CL	14B	39	26	99	125	OB	0	1814				
40					Moist, stiff tan fine SANDY LEAN CLAY	CL												
45																		
50																		

NOTES: Boring B-15 was drilled in 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

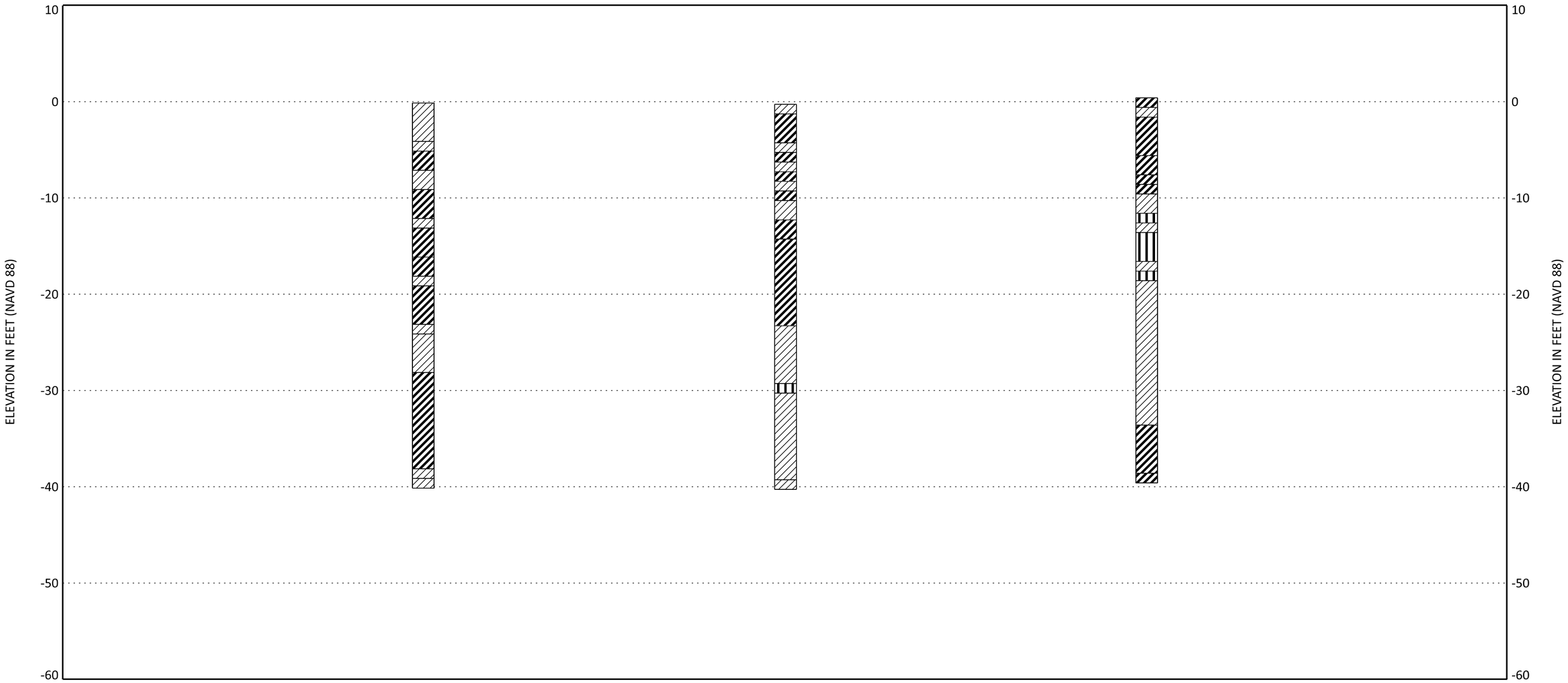
A

B-15
G.S.E. -0.14
11-12 JUL 2022

B-14
G.S.E. -0.28
12 JUL 2022

B-13
G.S.E. 0.40
12 JUL 2022

A'



BORING MATERIAL GRAPHICS

- FAT CLAY
- SILT
- LEAN CLAY

NOTE:

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

SUBSURFACE SOIL PROFILE
MCA-1A

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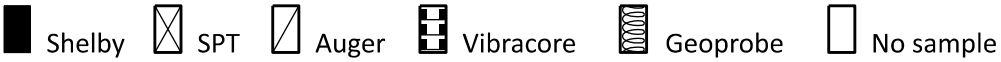
DRAWN BY: S.T.S.	JOB NO.: H0048
CHECKED BY: H.C.W.	DATE: 23 AUG 2022
CADD FILE: PROFILE.DGN	FIGURE 3 (SHEET 1 OF 4)

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.