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-8

Project No: H0048
Date: 07/17/2022
Latitude: 29.30950°
Longitude: -94.96556°

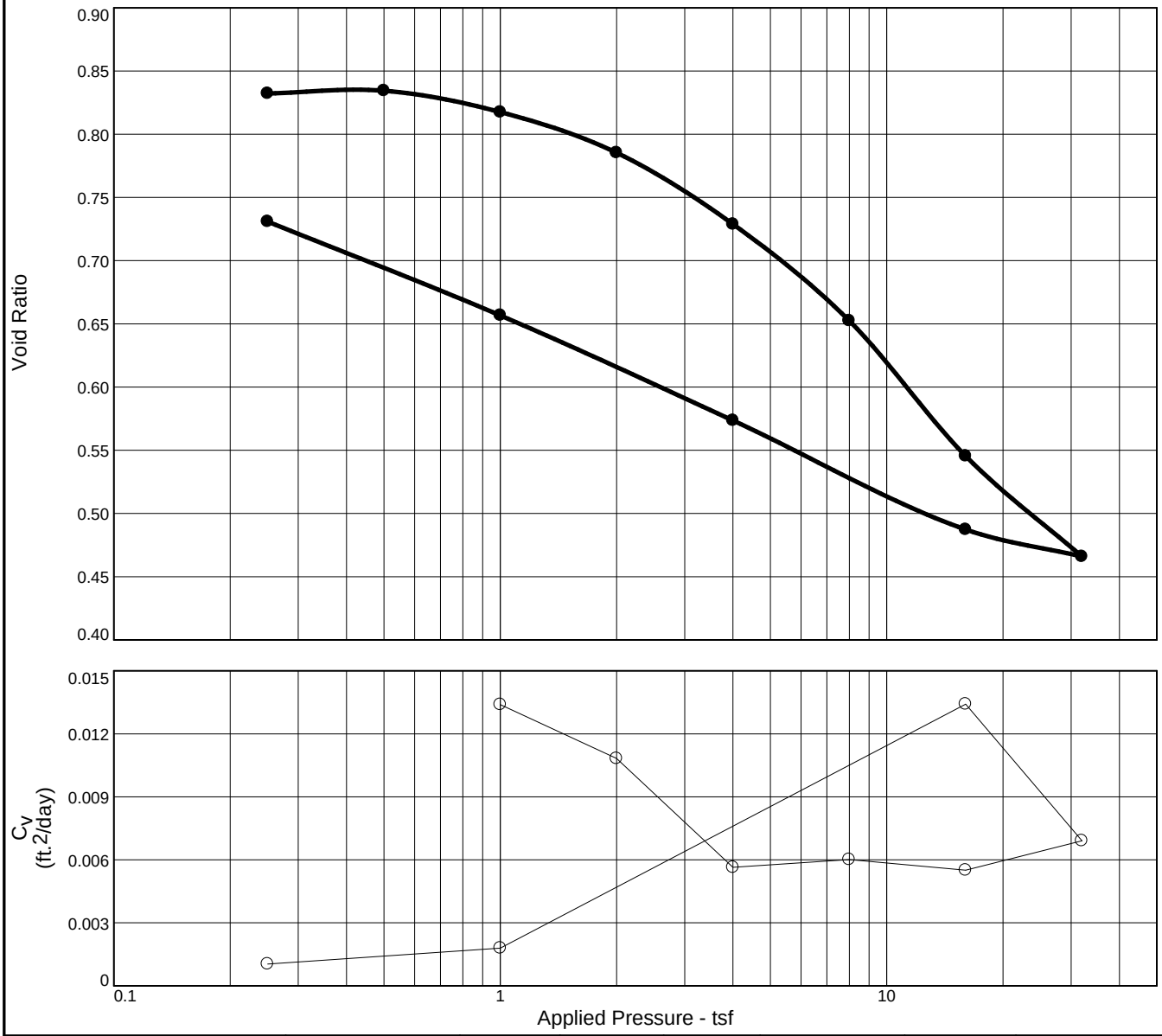
Water Depth: See Text
Total Depth: 40.0 ft

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					Moist, medium stiff to stiff gray & tan FAT CLAY w/trace of fine sand pockets	CH	1A	0	36										
	0.25						1B	1	29	92	119	OB	0	565					
					Moist, stiff gray & tan LEAN CLAY	CH	2A	2	27										
	0.50				Moist, soft gray & tan FAT CLAY w/few fine sand	CL	2B	3	31	92	120	OB	0	250					
							3A	4	30										
5	1.00				Moist, stiff gray & tan FAT CLAY w/trace of gravel	CH	3B	5	22						66	17	49		
							4A	6	29										
	1.00				w/organic matter		4B	7	24										
							5A	8	22										
	1.00				Moist, stiff greenish-gray & gray LEAN CLAY w/trace of fine gravel	CL	5B	9	29	95	122	OB	0	739					
10						CH	6A	10	27										
	1.00				Moist, medium stiff gray & tan FAT CLAY	CH	6B	11	33										
					Moist, stiff red, gray, & tan FAT CLAY w/trace of fine gravel & organic matter		7A	12	33										
	1.00						7B	13	29										
							8A	14	29										
15	1.00				Moist, medium stiff reddish-brown & gray FAT CLAY w/trace of concretions	CH	8B	15	32	89	117	OB	0	833					
							9A	16	23										
	1.00				Moist, stiff reddish-brown & gray LEAN CLAY	CL	9B	17	23						35	14	21		
							10A	18	33										
20	1.00				Moist, soft reddish-brown SILT W/SAND (fine)	ML	10B	19	21										
					Moist, very stiff red & gray LEAN CLAY	CL	11A	23	26										
	1.00				Moist, soft reddish-brown LEAN CLAY	CL	11B	24	19										
25																			
							12A	28	27										
	1.00						12B	29	24						75	24	51		CON
30																			
					Moist, stiff reddish-brown FAT CLAY	CH	13A	33	29										
	1.00						13B	34	28										
35																			
							14A	38	28										
	1.00				w/trace of fine sand pockets		14B	39	30	93	120	OB	0	1005					
40																			
45																			
50																			

EUSTIS_GINT_LIBRARY_4-18-2022.GLB EE STANDARD BORING LOG H0048.GPJ 8/18/22

NOTES: Boring 8 was drilled in 2 ft. of water.

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P_c (tsf)	C_c	Initial Void Ratio
Saturation	Moisture							
99.5 %	30.2 %	92.5	75	51	2.72	3.8	0.37	0.825

MATERIAL DESCRIPTION	USCS	AASHTO
M, so r-br FT CL	CH	

Project No. H0048 **Client:** DUCKS UNLIMITED, INC., RICHMOND, TEXAS

Project: DUCKS UNLIMITED, INC. - PIERCE MARSH BENEFICIAL USE MARSH CREATION, PHASES 1 AND 2,

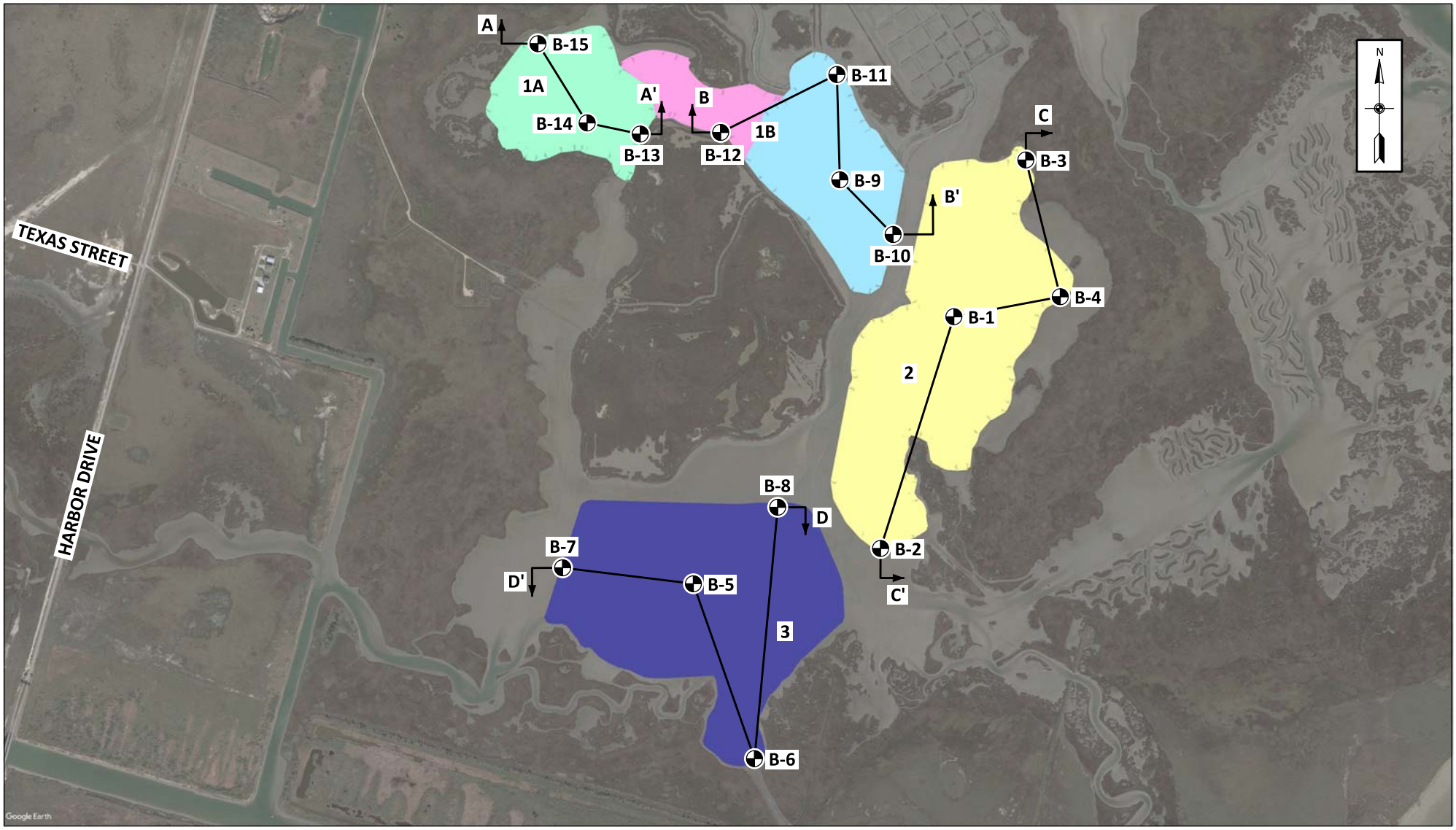
Source of Sample: B-8 **Depth:** 27.5 **Sample Number:** 12B

Remarks:

EUSTIS ENGINEERING SINCE 1946

Figure

Tested By: BH **Checked By:** RR



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

D

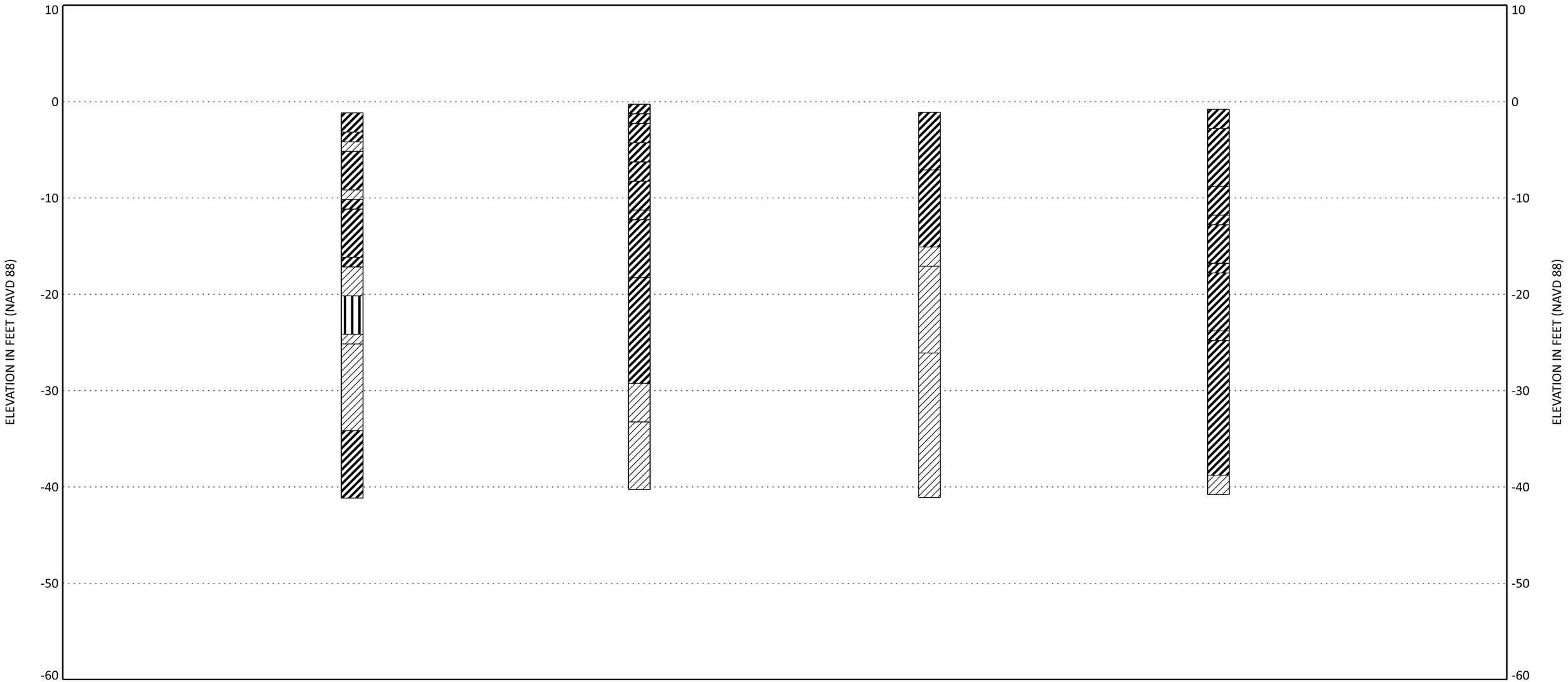
B-8
G.S.E. -1.16
17 JUL 2022

B-6
G.S.E. -0.26
17 JUL 2022

B-5
G.S.E. -1.09
18 JUL 2022

B-7
G.S.E. -0.79
18 JUL 2022

D'



BORING MATERIAL GRAPHICS

- FAT CLAY
- SILT
- LEAN CLAY

NOTE:

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

SUBSURFACE SOIL PROFILE
MCA-3
PHASE 1
DUCKS UNLIMITED, INC.
PIERCE MARSH BENEFICIAL USE MARSH CREATION
NORTH OF WEST BAY NEAR GALVESTON ISLAND
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EUSTIS ENGINEERING L.L.C. SINCE 1946

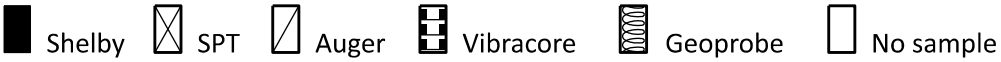
DRAWN BY: S.T.S.	JOB NO.: H0048
CHECKED BY: H.C.W.	DATE: 23 AUG 2022
CADD FILE: PROFILE.DGN	FIGURE 3 (SHEET 4 OF 4)

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.