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-10

Project No: H0048
Date: 07/14/2022
Latitude: 29.31635°
Longitude: -94.96235°

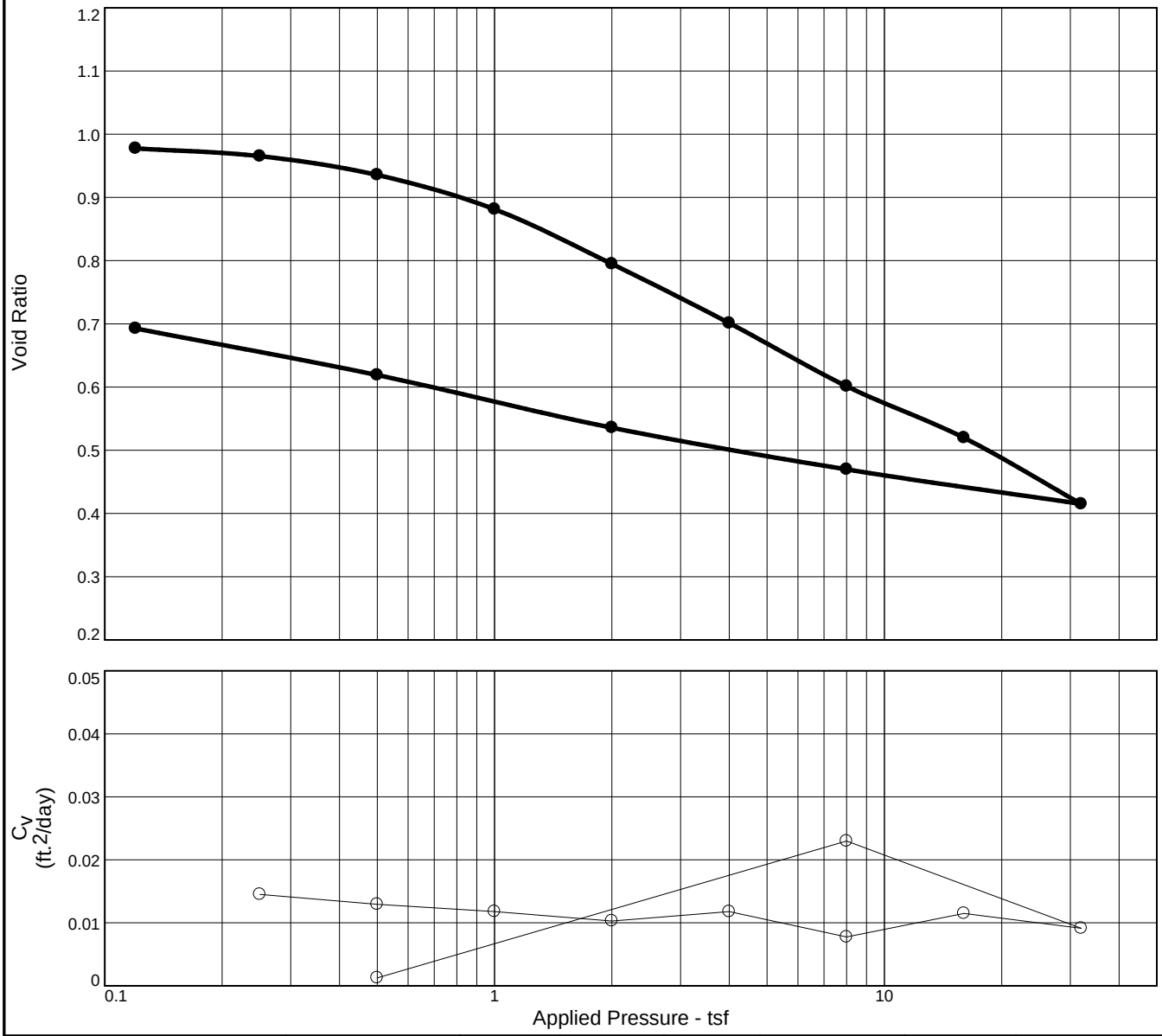
Water Depth: See Text
Total Depth: 40.0 ft

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	0.25				Moist, very soft gray LEAN CLAY	CL	1A	0	42									
					Moist, very soft to soft gray FAT CLAY w/trace of organic matter	CH	1B	1	47						56	17	39	CON
	0.50						2A	2	38									
					Moist, very stiff gray & reddish-brown FAT CLAY	CH	2B	3	33									
						CH	3A	4	36									
5	0.50				Moist, soft to medium stiff gray, brown, & tan FAT CLAY		3B	5	28	95	122	OB	0	609				
							4A	6	38									
	1.00						4B	7	35						67	16	51	
							5A	8	34									
	1.00				w/trace of fine gravel		5B	9	33									
10					Moist, soft reddish-brown LEAN CLAY w/trace of organic matter	CL	6A	10	30									
	1.00					CL	6B	11	28									
					Moist, stiff reddish-brown LEAN CLAY w/trace of organic matter	ML	7A	12	25									
	0.50						7B	13	26	98	124	OB	0	1097				
					Moist, loose red CLAYEY SILT	CL	8A	14	22									
15	2.00				Moist, stiff reddish-brown LEAN CLAY w/few concretions	ML	8B	15	28	96	123	OB	0	1187				
						CH	9A	16	30									
	1.00				Moist, loose red CLAYEY SILT		9B	17	23						50	18	32	
					Moist, stiff to very stiff reddish-brown & gray FAT CLAY w/few fine sand pockets & concretions		10A	18	25									
	1.00						10B	19	22									
20																		
							11A	23	26									
	1.00				Moist, medium stiff to stiff reddish-brown & gray FAT CLAY	CH	11B	24	24	103	127	OB	0	980				
25																		
							12A	28	29									
	1.00				Moist, stiff reddish-brown, tan, & gray LEAN CLAY	CL	12B	29	20									
30																		
							13A	33	31									
	1.00				w/few concretions		13B	34	24	103	127	OB	0	1496				
35																		
							14A	38	35									
	1.00						14B	39	26						45	17	28	
40																		
45																		
50																		

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

NOTES: Boring Log B-10 was drilled in 1 ft of water.

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	P_c (tsf)	C_c	Initial Void Ratio
Saturation	Moisture							
98.9 %	35.6 %	87.9	56	39	2.72	1.0	0.30	0.980

MATERIAL DESCRIPTION	USCS	AASHTO
M, vso g FT CL w/ tr om	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-10 **Depth:** 1 **Sample Number:** 1B

EUSTIS ENGINEERING SINCE 1946

Remarks:

Figure

Tested By: CH **Checked By:** RR

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
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: 23 AUG 2022
CADD FILE: PROFILE.DGN	FIGURE 3 (SHEET 2 OF 4)

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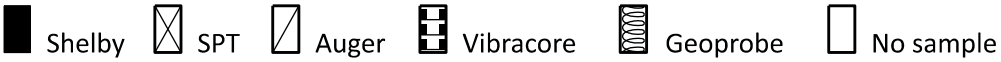
LEGEND AND NOTES FOR LOG OF BORING AND TEST RESULTS

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

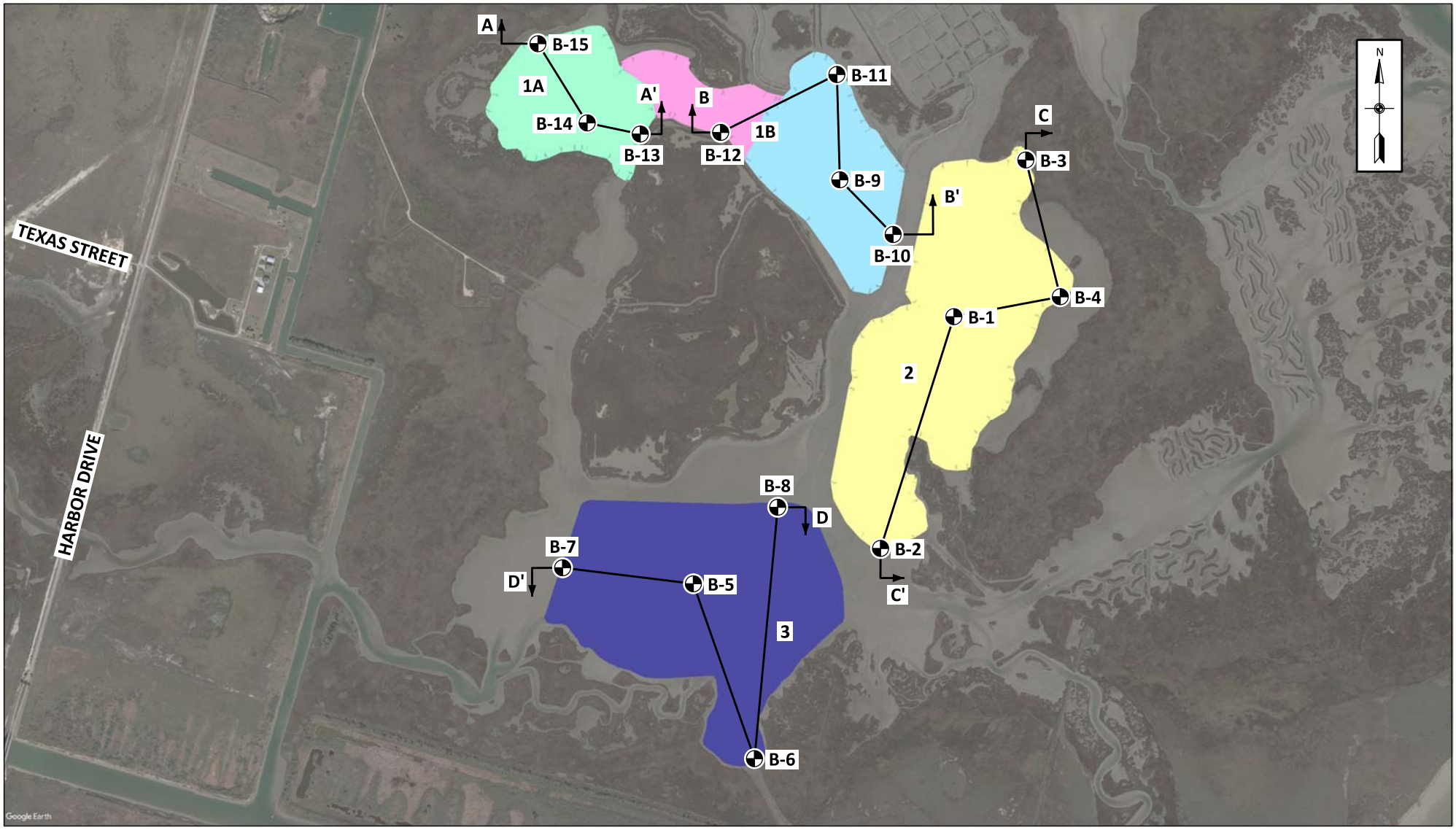
- CON Consolidation
- -#200 Percent passing a U.S. No. 200 sieve
- SV Particle size distribution (sieve only)
- PD Particle size distribution (sieve and hydrometer)
- k Coefficient of permeability in centimeters per second
- SP Swelling pressure in pounds per square foot

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.



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
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DU CONTRACT NO. TX-0-2
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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: 15 AUG 2022
CADD FILE: LOCATION PLAN.DGN	FIGURE 2