

ATTACHMENT 2

PROJECT DRAWINGS

Dated May 2011

Town of Nags Head Beach Nourishment Project

Prepared by Coastal Science & Engineering Inc

TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT

Nags Head Beach

Dare County, North Carolina

Drawing Index

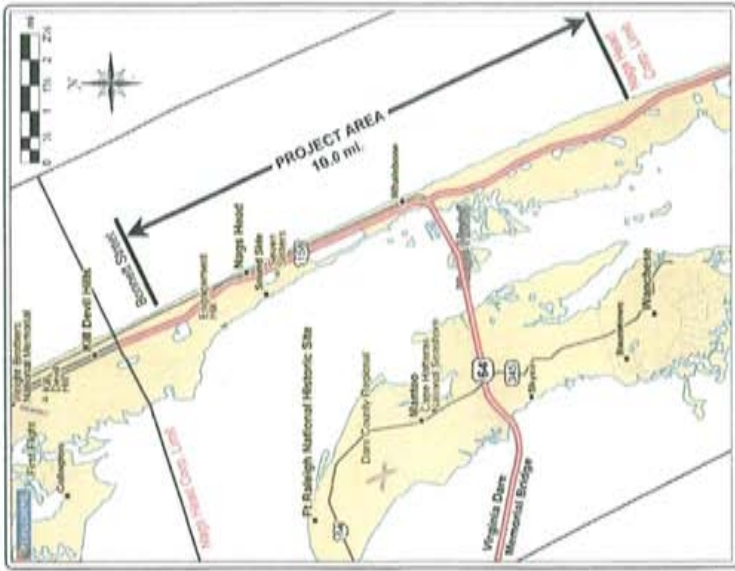
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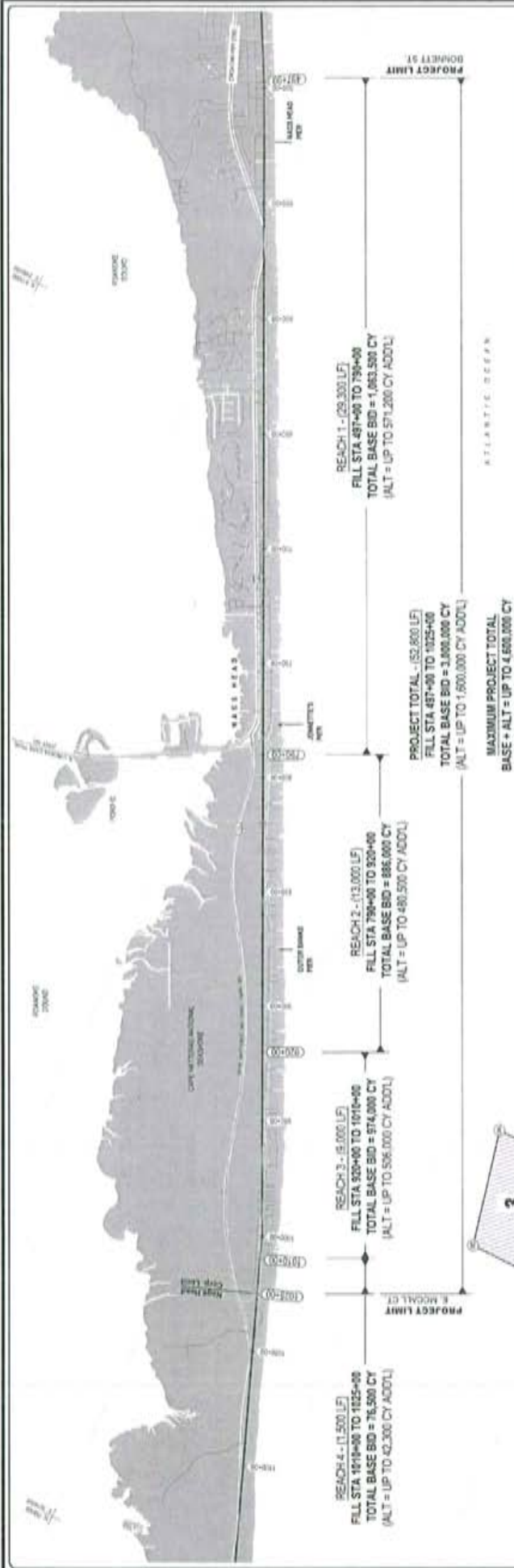
OWNER:
TOWN OF NAGS HEAD
5401 SOUTH OCEAN HWY
NAGS HEAD NC 27959
PHONE 252-441-1122

ENGINEER:
PO BOX 5056
COLUMBIA SOUTH CAROLINA 29202
PHONE 803.799.8948
FAX 803.799.9481

WWW.COASTALSCIENCE.COM
CSE
Coastal Science & Engineering

DIRECTIONS:
From North (Norfolk/Currituck):
Take NC-158 (S. Currituck Hwy) South
Continue on US-158 (S. Currituck Hwy)
Turn Left onto US-158 (S. Wright Memorial Bridge)
From West (Jacksboro/Beaufort):
Take US-64 East
Slight left at US-158 West
Continue onto US-158 (S. Wright Memorial Bridge)
North Project Limit: E. Business 12.4-13.0 mi. North of US-64/US-158 intersection
South Project Limit: E. Beaufort 12.4-13.0 mi. South of US-64/US-158 intersection





BASE BID - ALTERNATE BID Plan (Up To 4.0 million CY) - FFL Schedule		BASE BID (2 million CY) - FFL Schedule		BASE BID (2 million CY) - FFL Schedule	
Reach #	Line Item	Line Item	Line Item	Reach #	Line Item
1	100+00 to 100+00	100+00 to 100+00	100+00 to 100+00	1	100+00 to 100+00
2	100+00 to 100+00	100+00 to 100+00	100+00 to 100+00	2	100+00 to 100+00
3	100+00 to 100+00	100+00 to 100+00	100+00 to 100+00	3	100+00 to 100+00
4	100+00 to 100+00	100+00 to 100+00	100+00 to 100+00	4	100+00 to 100+00
TOTAL		TOTAL		TOTAL	
1,063,500 CY		886,000 CY		974,000 CY	

REACH TOTALS		REACH TOTALS		REACH TOTALS	
Reach #	Line Item	Reach #	Line Item	Reach #	Line Item
1	100+00 to 100+00	1	100+00 to 100+00	1	100+00 to 100+00
2	100+00 to 100+00	2	100+00 to 100+00	2	100+00 to 100+00
3	100+00 to 100+00	3	100+00 to 100+00	3	100+00 to 100+00
4	100+00 to 100+00	4	100+00 to 100+00	4	100+00 to 100+00
TOTAL		TOTAL		TOTAL	
1,063,500 CY		886,000 CY		974,000 CY	

REACH TOTALS		REACH TOTALS		REACH TOTALS	
Reach #	Line Item	Reach #	Line Item	Reach #	Line Item
1	100+00 to 100+00	1	100+00 to 100+00	1	100+00 to 100+00
2	100+00 to 100+00	2	100+00 to 100+00	2	100+00 to 100+00
3	100+00 to 100+00	3	100+00 to 100+00	3	100+00 to 100+00
4	100+00 to 100+00	4	100+00 to 100+00	4	100+00 to 100+00
TOTAL		TOTAL		TOTAL	
1,063,500 CY		886,000 CY		974,000 CY	

STATE OF NORTH CAROLINA

PROJECT: TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT

CLIENT: TOWN OF NAGS HEAD 5401 SOUTH CROATAN HWY NAGS HEAD NC 27859

DESIGNING FIRM: CSE Coastal Science & Engineering

DATE: 12/15/2017

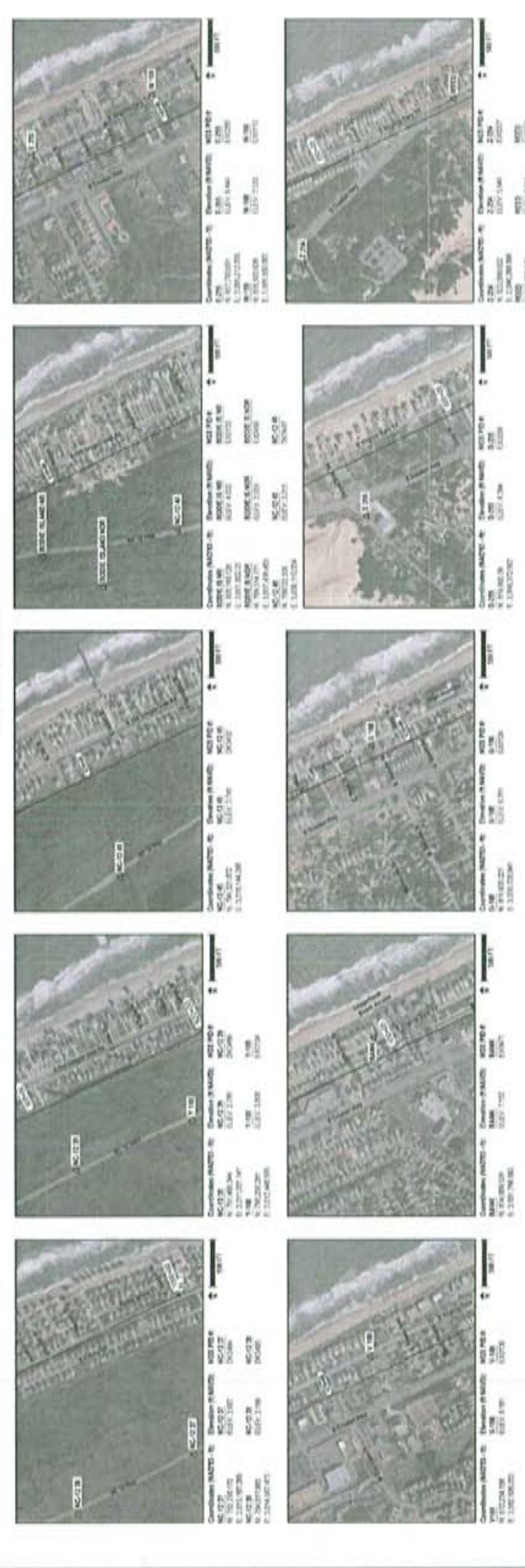
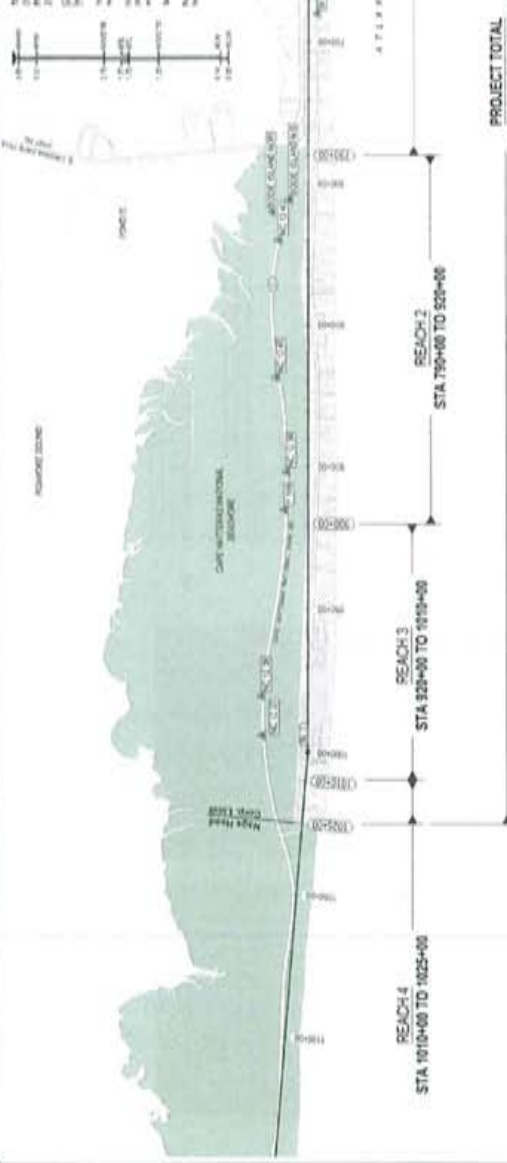
PROJECT NO: 17-001

PROJECT NAME: TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT

PROJECT LOCATION: NAGS HEAD NC 27859

PROJECT DESCRIPTION: TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT

PROJECT STATUS: 02

[illegible][illegible]



SECTION 1

The Contractor will be required to construct a nourishment fill structure along the beach profile of Station 0+00 to 0+400. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan.

SECTION 2

The Contractor will be required to construct a nourishment fill structure along the beach profile of Station 0+00 to 0+400. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan.

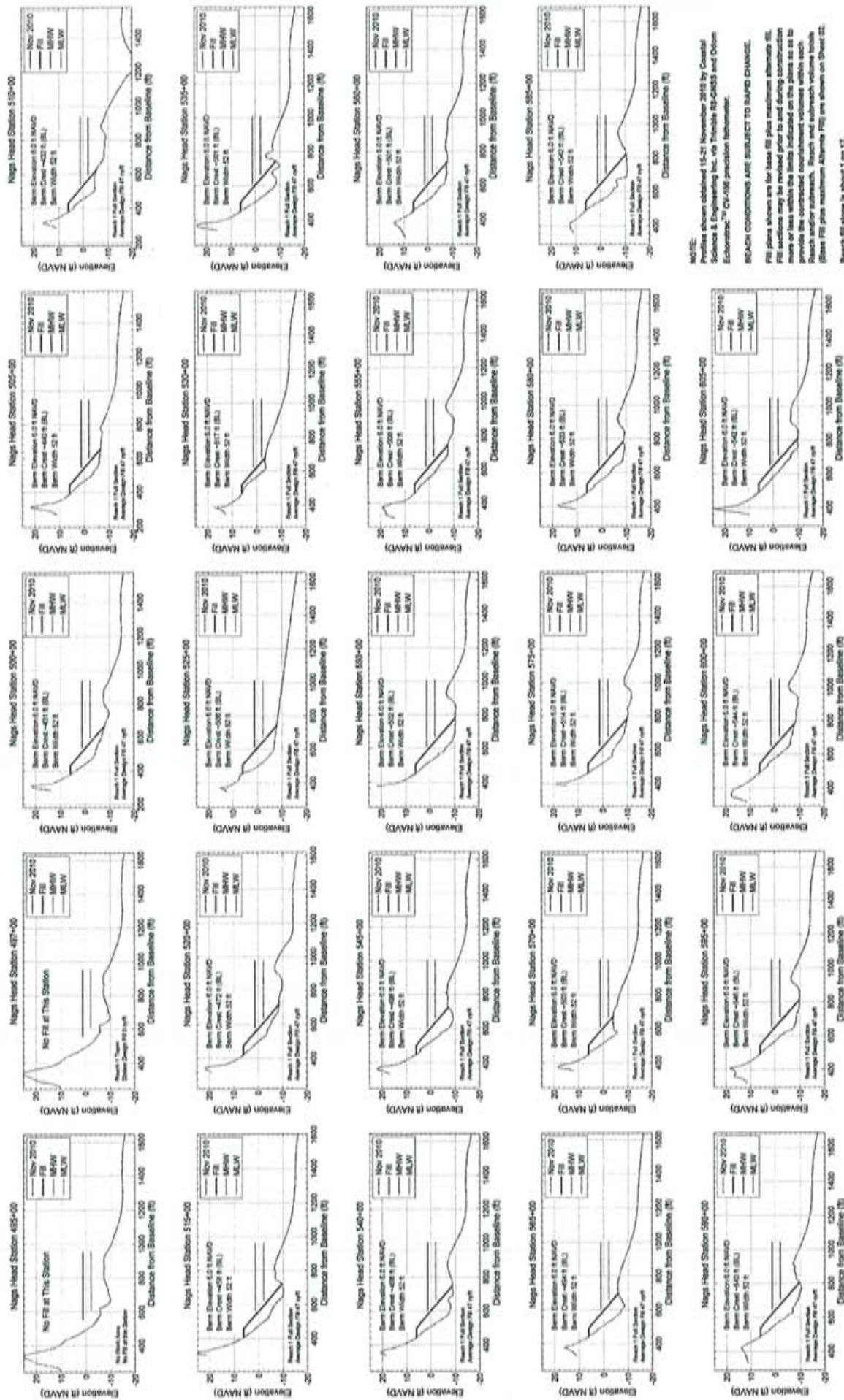
SECTION 3

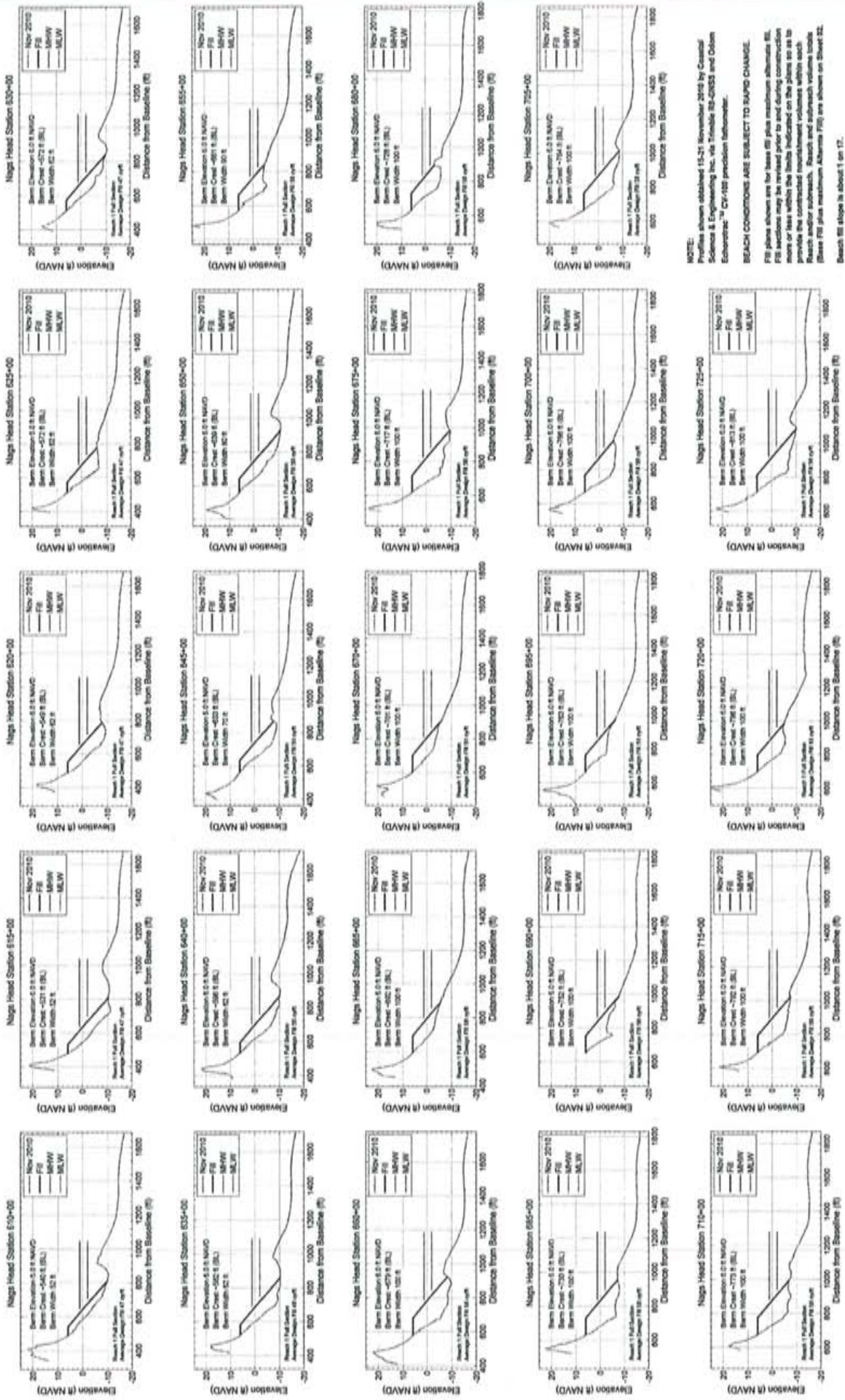
The Contractor will be required to construct a nourishment fill structure along the beach profile of Station 0+00 to 0+400. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan.

SECTION 4

The Contractor will be required to construct a nourishment fill structure along the beach profile of Station 0+00 to 0+400. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan. The nourishment fill structure will be constructed in accordance with the design shown on this plan.

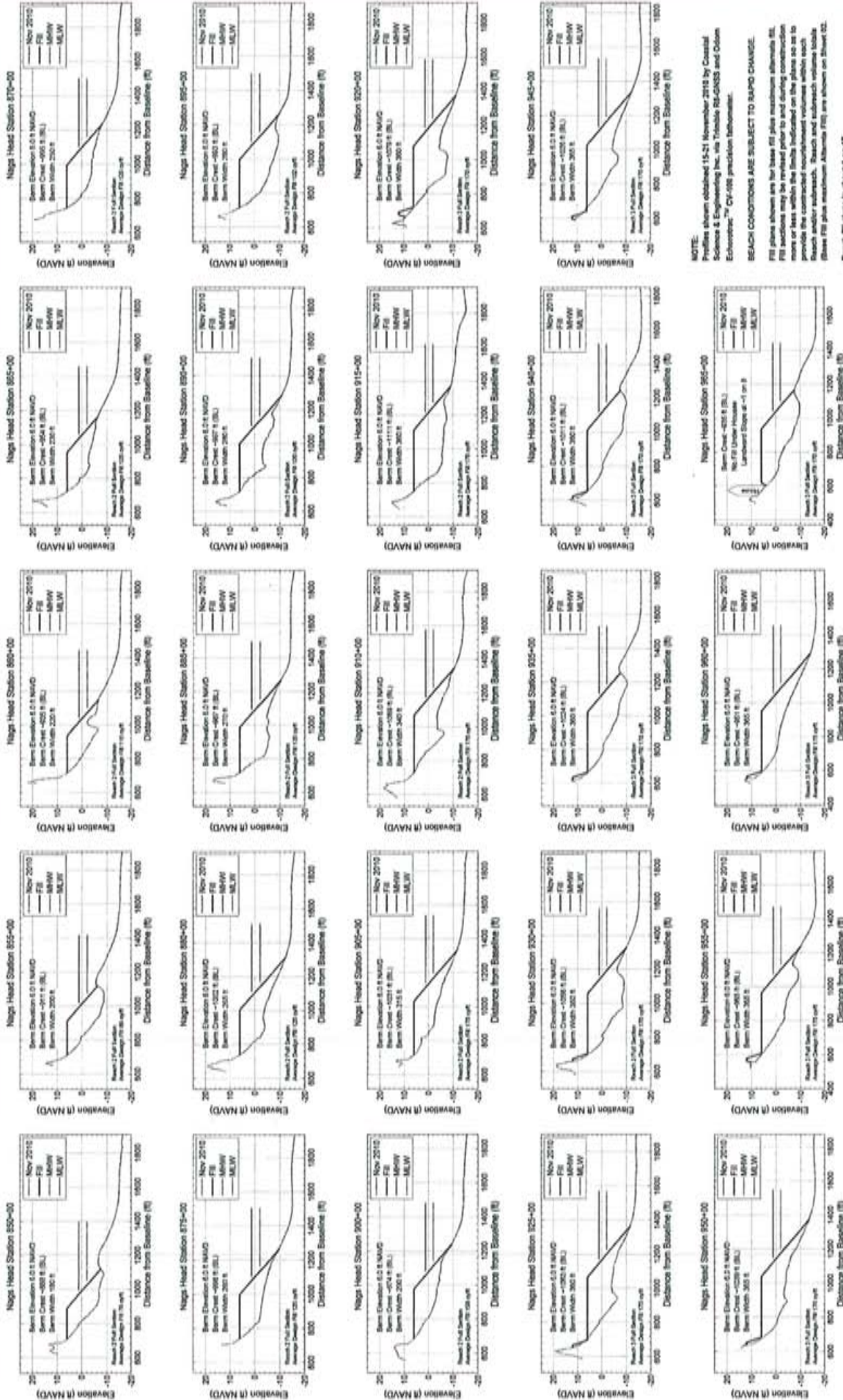
CLIENT TOWN OF NAGS HEAD 5401 SOUTH CROATAN HWY NAGS HEAD NC 27559		PROJECT TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT		DESIGNED BY NOURISHMENT FILL PLAN STA 850+00 TO 1025+00 REACH 2.3 & 4		DATE ALL SHEETS 07	
ENGINEER CSE CONSULTING ENGINEERS 401 S. 1st St. Raleigh, NC 27601 (919) 733-1111 www.cse-engineers.com		SCALE 1" = 40' HORIZ. 1" = 10' VERT.		PROJECT NO. 2023-001		DATE 07/20/23	





NOTE:
 Profiles shown obtained 15-21 November 2010 by Coastal
 Science & Engineering Inc. via Trimble 580-GEN3 and Odium
 Electronic "C" CV-100 precision bathymeter.
 BEACH CONDITIONS ARE SUBJECT TO RAMP CHANGE
 FFI plans shown are for base 60 ft plus maximum alternate 10 ft
 FFI sections may be revised prior to and during construction
 more or less within the limits indicated on the plans so as to
 provide the contracted nourishment volumes within each
 Reach and/or subreach. Reach and subreach volume totals
 (Base FFI plus maximum Alternate FFI) are shown on Sheet 52.
 Beach 60 slope is about 1 on 17.

					
PROJECT: TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT					
CLIENT: TOWN OF NAGS HEAD 5401 SOUTH CROATAN HIGHWAY NAGS HEAD NC 27559					
DESIGNING FIRM: GEOTECHNICAL & ENGINEERING, INC. 10000 W. 10TH AVENUE SUITE 200 DENVER CO 80202					
DRAWING TITLE: NOURISHMENT FILL PLAN PROFILES STA 610+00 TO 725+00					
DATE: 09		SCALE: AS SHOWN		PROJECT NO: 2009-02	
BY: [Signature]		CHECKED BY: [Signature]		APPROVED BY: [Signature]	

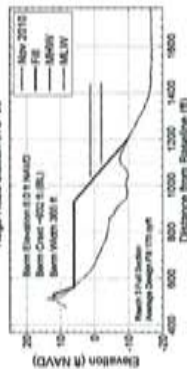


NOTE:
 Profiles shown obtained 15-21 November 2010 by Coastal
 Science & Engineering Inc. via Mobile RS-DGPS and Odson
 Echotrac™ CY-090 precision bathymeter.
 BEACH CONDITIONS ARE SUBJECT TO RAPID CHANGE.
 FRI plans shown are for latest FRI plus maximum alternate RL.
 FRI sections may be revised prior to and during construction
 phase of beach within the limits indicated on the plans as to
 Beach and/or subsoil. Beach and subsoil volume table
 (Base FRI plus maximum alternate FRI) are shown on Sheet 02.
 Beach fill slope is about 1 on 17.

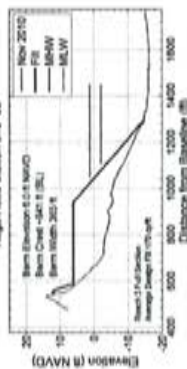
PROJECT TOWN OF NAGS HEAD BEACH RESTORATION PROJECT		DRAWING TITLE NOURISHMENT FILL PLAN PROFILES STA 855-00 to 955-00	
CLIENT TOWN OF NAGS HEAD 5401 SOUTH OCEAN HWY NAGS HEAD NC 27555		SHEET NO. 11	
DATE May 2011		DESIGNED BY JAP	
CHECKED BY JAP		PROJECT NO. 2009-01	
SCALE AS SHOWN		DRAWN BY JAP	
PROJECT NO. 2009-01		SHEET NO. 11	

Coastal Science & Engineering
 10101 E. 10th Ave.
 Suite 100
 Denver, CO 80231-1001
 Phone: 303.755.0001
 Fax: 303.755.0002
 Email: info@csengr.com

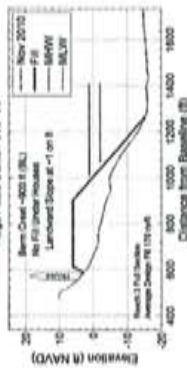
Nags Head Station 970+00



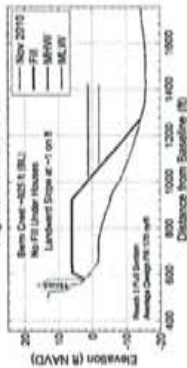
Nags Head Station 975+00



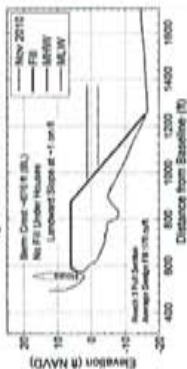
Nags Head Station 980+00



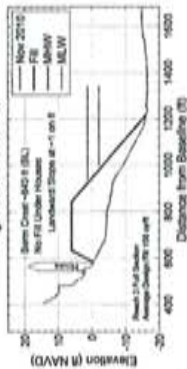
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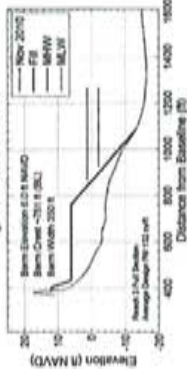
Nags Head Station 990+00



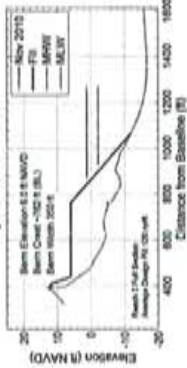
Nags Head Station 995+00



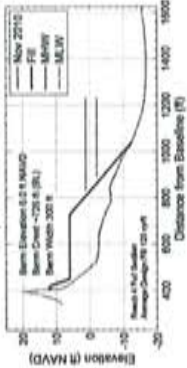
Nags Head Station 1000+00



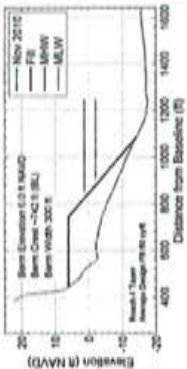
Nags Head Station 1005+00



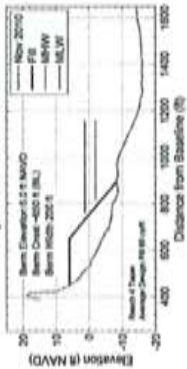
Nags Head Station 1010+00



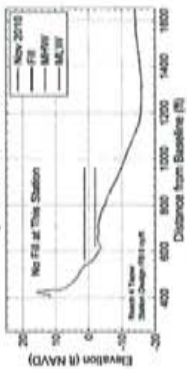
Nags Head Station 1015+00



Nags Head Station 1020+00



Nags Head Station 1025+00



Nags Head Station 1030+00



Nags Head Station 1035+00



Nags Head Station 1040+00



NOTE:

Profiles shown obtained 15-21 November 2010 by Coastal Science & Engineering, Inc. via Mobile RS-CMS3 and Ocean Echotrac™ CV-100 precision bathymetry.

BEACH CONDITIONS ARE SUBJECT TO RAPID CHANGE.

Profile sections may be realized prior to and during construction work or less within the limits indicated on the plans as to beach and dune conditions. Beach and dune conditions shown are for the date of the profile. Beach and dune conditions shown are for the date of the profile. Beach and dune conditions shown are for the date of the profile.

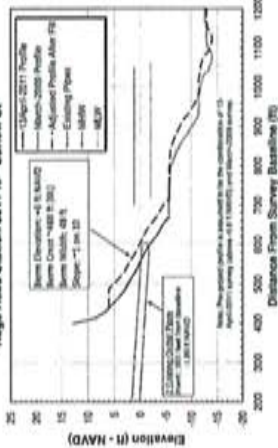
Beach fill slope is about 1 on 15.

Storm Water Outfall Profiles

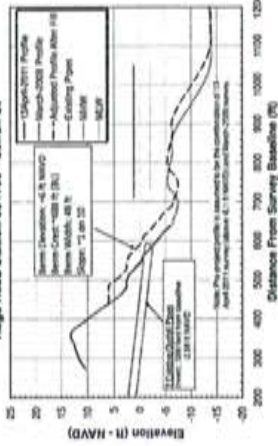
Beach Fill Around Existing Storm Water Outfalls

- (1) Outfall segment end location and invert elevation are based on 15-Apr-2011 data collected by CSE.
- (2) Pre-project profile shown is the combination of data collected by CSE in March 2008 and April 2011.
- (3) Post project profile shown is the anticipated shape after normal adjustment.
- (4) The Contractor is required to mark azimuth of outfall and its seaward end via standing beam range stakes (minimum of 2 with flagging).
- (5) Contractor shall exercise extreme caution around outfalls so as to avoid damaging the structures.
- (6) Outfall extension is not part of the Project.

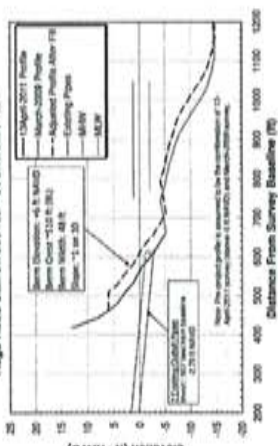
Nags Head Station 531+40 - Curlew St



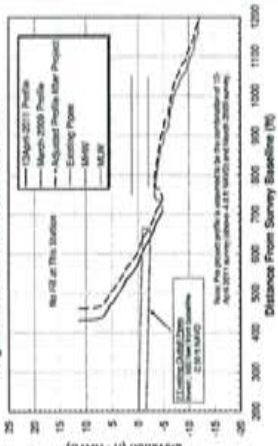
Nags Head Station 554+60 - Conch St



Nags Head Station 580+85 - Sound Side Rd



Nags Head Station 1025+22 - National Park



NO.	REVISION	BY	DATE

CSE
Coastal Science & Engineering
2000 S. US Highway 1
P.O. Box 1000
Nags Head, NC 27959
www.cse-engineering.com

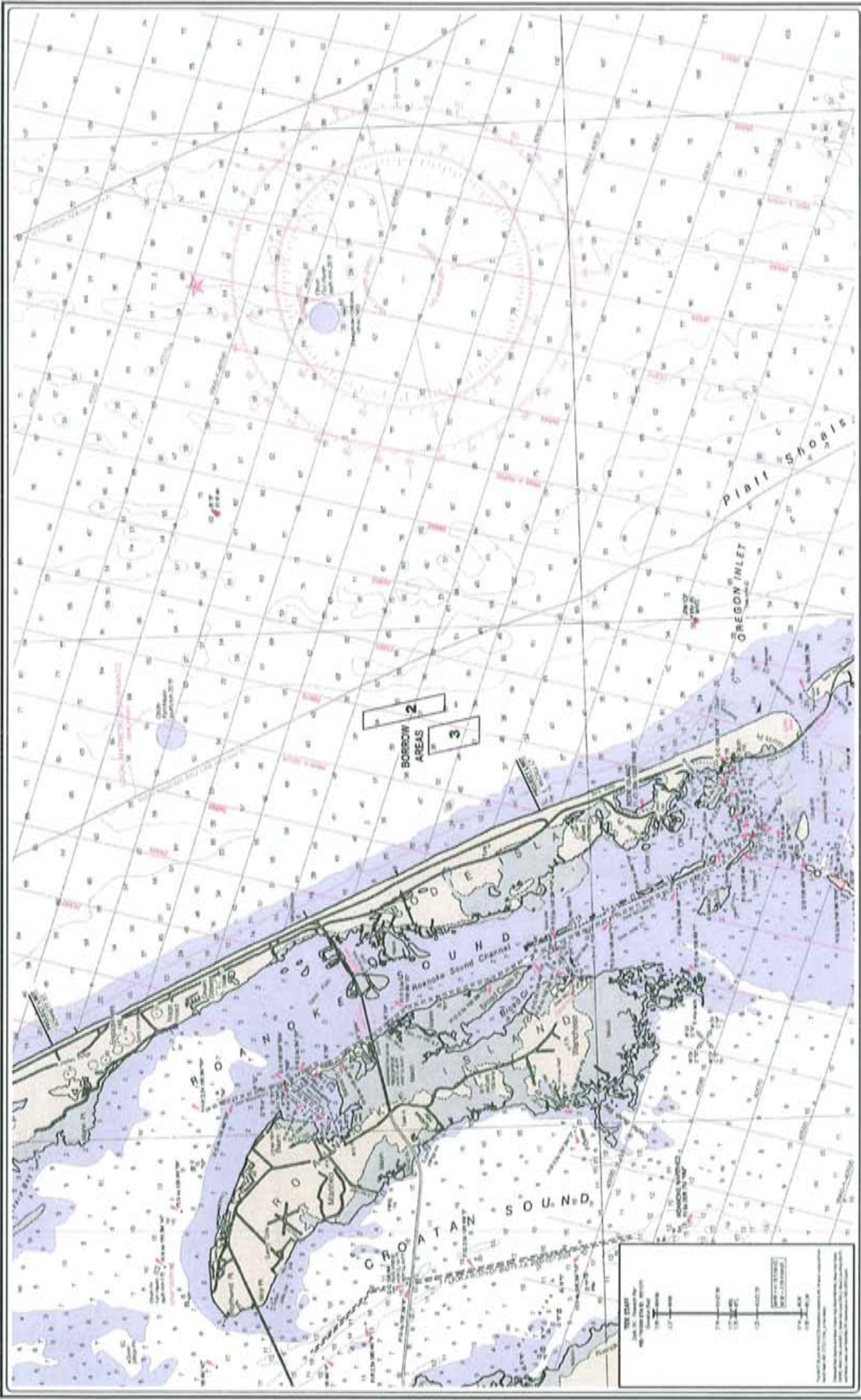
CLIENT:
TOWN OF NAGS HEAD
5401 SOUTH CROATAN HWY
NAGS HEAD NC 27959

PROJECT:
TOWN OF NAGS HEAD
BEACH NOURISHMENT PROJECT

DRAWING TITLE:
NOURISHMENT FILL PLAN PROFILES
STA 970+00 TO 1025+00
& OUTFALL STATIONS

COASTAL SCIENCE & ENGINEERING
INCORPORATED
1000 S. US HIGHWAY 1
NAGS HEAD, NC 27959
(252) 735-5888
www.cse-engineering.com

DATE: 12-2011
DRAWN BY: JAM
CHECKED BY: TRM
PROJECT: 2008-02
PAGE: 2



	
CSE Coastal Science & Engineering 1000 S. 10th Street Raleigh, NC 27603 Phone: 919.733.8800 Email: info@cse-engineering.com	
CLIENT TOWN OF NAGS HEAD 5401 SOUTH CROATAN HWY NAGS HEAD NC 27559	
PROJECT TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT	
CHARTING TITLE NEARSHORE BATHYMETRY CURRITUCK BEACH LIGHT TO WABLE SHOALS NOAA CHART NO. 12226 27th Ed. Dec. 07	
FILE NO. 13	
DATE 10/20/14	BY JLM
REVISION 10/20/14	DATE 10/20/14



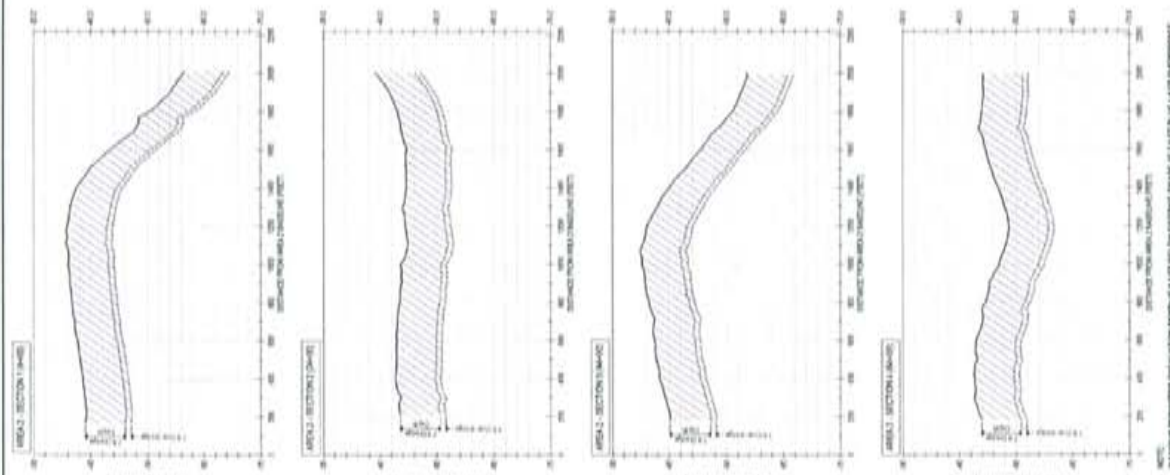
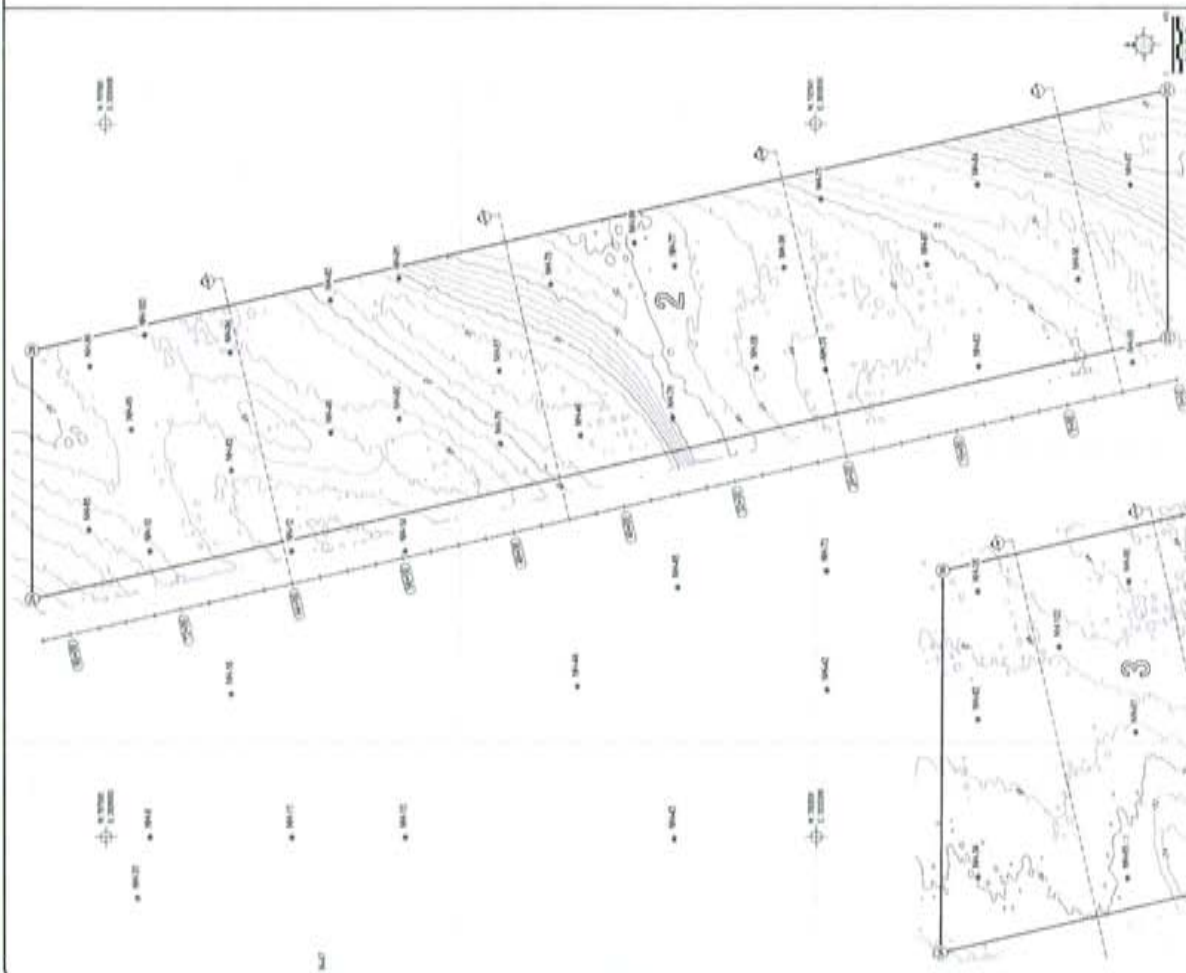
NOTES:

SECTIONED IN BOARD POSITION

ALL SECTION FROM LARGEST
DIMENSIONAL INFORMATION
SEE SHEET N-27 FOR
SECTIONAL INFORMATION
FROM CORE FROM



BIOGRAPH BRN 2 - COORDINATE COUNT				
Session: 001 (Date: 10/06/2000)				
	Start	End	Duration	Count
1	0:00	0:05	0:05	100
2	0:05	0:10	0:05	100
3	0:10	0:15	0:05	100
4	0:15	0:20	0:05	100
5	0:20	0:25	0:05	100
6	0:25	0:30	0:05	100
7	0:30	0:35	0:05	100
8	0:35	0:40	0:05	100
9	0:40	0:45	0:05	100
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71	5:50	5:55	0:05	100
72	5:55	6:00	0:05	100
73	6:00	6:05	0:05	100
74	6:05	6:10	0:05	100

[illegible]

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3705

Borrow Area 2
Bathymetry Sections & Notes

PROJECT

CLIENT
TOWN OF MAGS HEAD
101 SOUTH OROUAN HWY

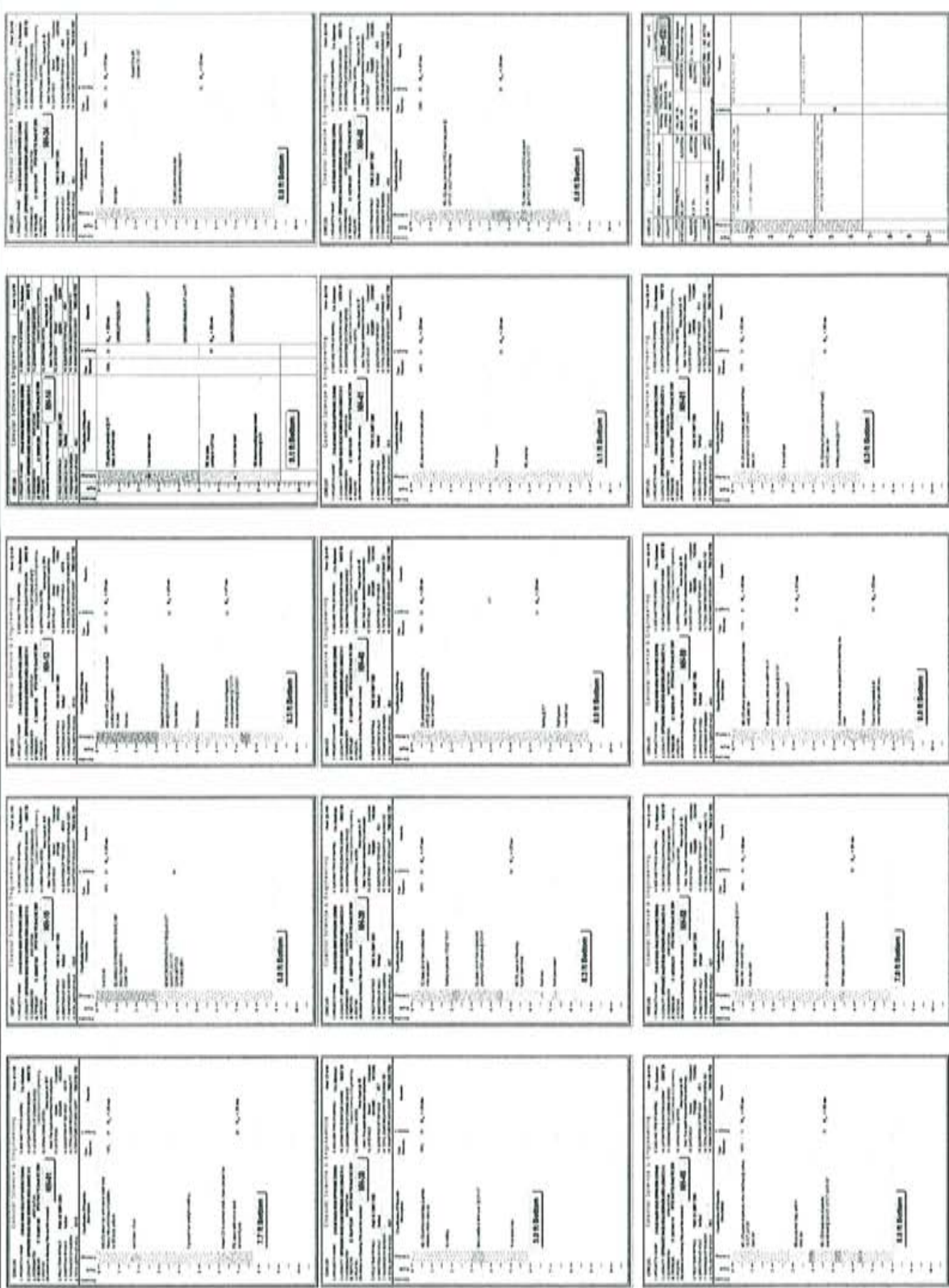
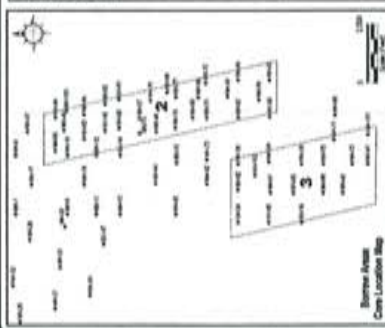
CSE
Graduate School of Engineering
Central Science & Engineering

SCHEMATIC SHOW COLLECTED BY:
TOWNSHIP OF LAKOTA, NORTH DAKOTA
COUNTY OF BEND, NORTH DAKOTA
WATERWAY: LAKOTA RIVER
DATE: 10/10/10
BY: J. L. HARRIS

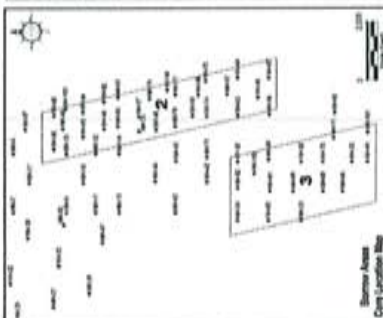
DATE	4/2/2009	14
BY	May 2011	
REMARKS	25	

Final Contract





NO.	REVISION	BY	DATE	 GSE Coastal Science & Engineering 4015 E. 9th Ave. Suite 100 Pompano Beach, FL 33062 Phone: 954.781.1000 www.gse-engineering.com	CLIENT: TOWN OF NAGS HEAD 5401 SOUTH CROATAN HWY NAGS HEAD NC 27569	PROJECT: TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT	DRAWING TITLE: GEOTECHNICAL DATA CORE LOGS 01 - 52	 	DATE: AS SHOWN DATE: Nov 2011 DRAWN: JAM CHECKED: TBR/MLA PROJECT #: 2010-02	SHEET # 16 OF 22
-----	----------	----	------	--	--	--	--	--	---	-----------------------------------

[illegible]

CSE
Coastal Science & Engineering
PO Box 1033
Chilmark South Carolina 29922
Phone 803-735-0548
www.coastalscience.com

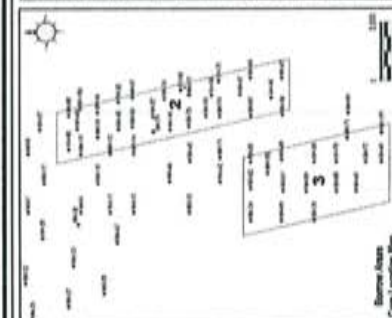
CLIENT:
TOWN OF NAGS HEAD
1401 SOUTH CROATAN HWY
NAGS HEAD NC 27559

PROJECT: TOWN OF NAGS HEAD
BEACH NOURISHMENT PROJECT

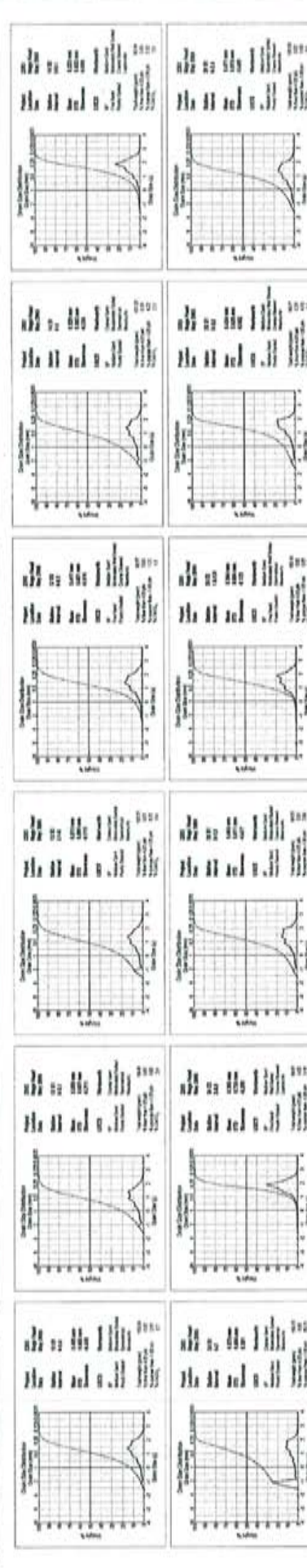
GEOTECHNICAL DATA
CORE LOSS 63 - 81



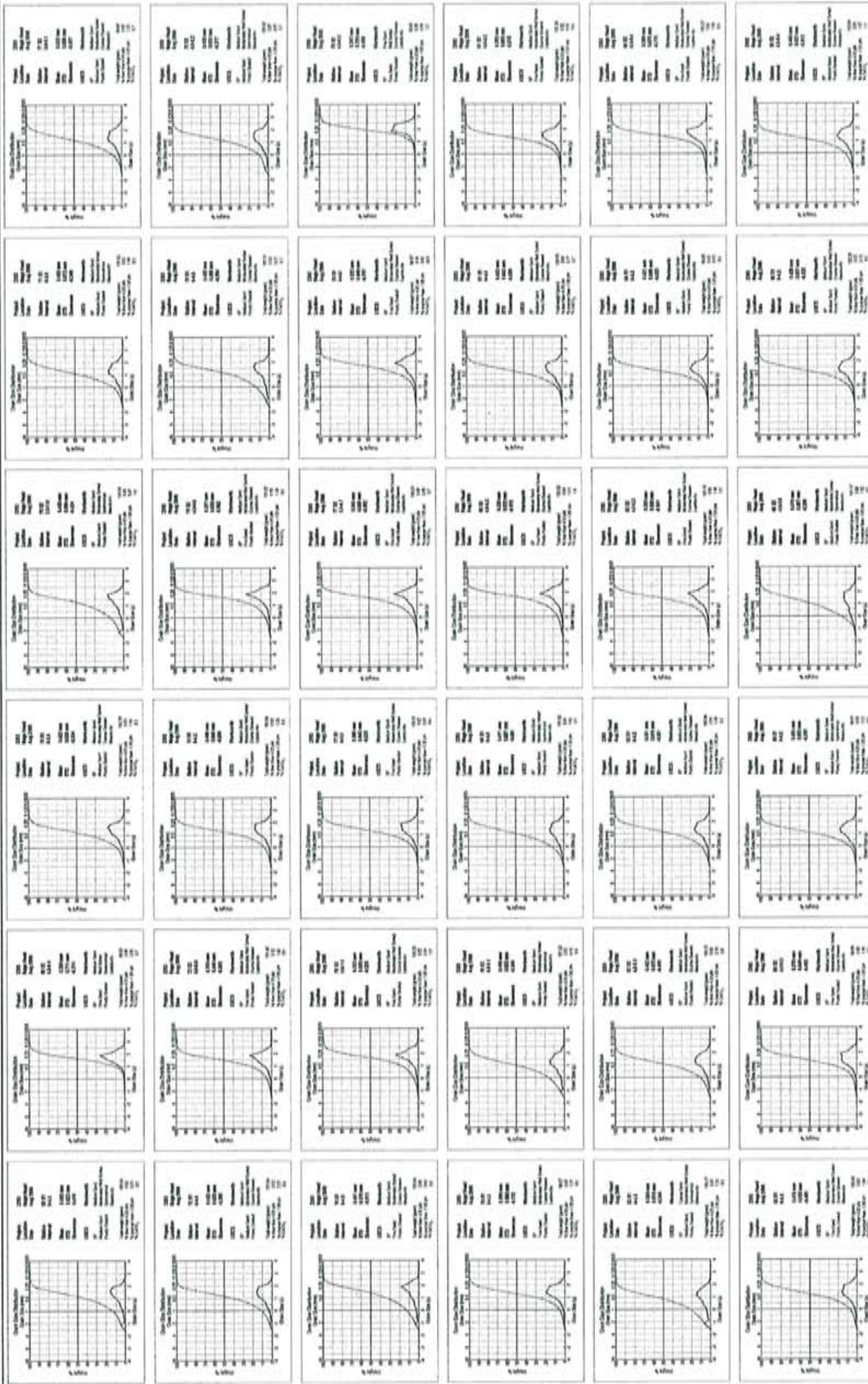
NAME	AGE	DOB	SEX	DATE	TIME	TEST	RESULT	UNIT	REF
				17					



Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5	Sheet 6
Geotechnical Test Results & Interpretation Test No. 101 Soil Type: Silty Clay Moisture Content: 25.5% Liquid Limit: 45.0% Plastic Limit: 18.0% Shrinkage: 12.0% Compaction: 95% Unconfined Compressive Strength: 1.20 ksf Shear Strength: 1.00 ksf Penetration Resistance: 1000 psi Swelling Potential: 0.5% Soil Classification: CL-ML	Geotechnical Test Results & Interpretation Test No. 102 Soil Type: Silty Clay Moisture Content: 26.0% Liquid Limit: 46.0% Plastic Limit: 19.0% Shrinkage: 13.0% Compaction: 95% Unconfined Compressive Strength: 1.10 ksf Shear Strength: 0.90 ksf Penetration Resistance: 950 psi Swelling Potential: 0.6% Soil Classification: CL-ML	Geotechnical Test Results & Interpretation Test No. 103 Soil Type: Silty Clay Moisture Content: 27.0% Liquid Limit: 47.0% Plastic Limit: 20.0% Shrinkage: 14.0% Compaction: 95% Unconfined Compressive Strength: 1.00 ksf Shear Strength: 0.80 ksf Penetration Resistance: 900 psi Swelling Potential: 0.7% Soil Classification: CL-ML	Geotechnical Test Results & Interpretation Test No. 104 Soil Type: Silty Clay Moisture Content: 28.0% Liquid Limit: 48.0% Plastic Limit: 21.0% Shrinkage: 15.0% Compaction: 95% Unconfined Compressive Strength: 0.90 ksf Shear Strength: 0.70 ksf Penetration Resistance: 850 psi Swelling Potential: 0.8% Soil Classification: CL-ML	Geotechnical Test Results & Interpretation Test No. 105 Soil Type: Silty Clay Moisture Content: 29.0% Liquid Limit: 49.0% Plastic Limit: 22.0% Shrinkage: 16.0% Compaction: 95% Unconfined Compressive Strength: 0.80 ksf Shear Strength: 0.60 ksf Penetration Resistance: 800 psi Swelling Potential: 0.9% Soil Classification: CL-ML	Geotechnical Test Results & Interpretation Test No. 106 Soil Type: Silty Clay Moisture Content: 30.0% Liquid Limit: 50.0% Plastic Limit: 23.0% Shrinkage: 17.0% Compaction: 95% Unconfined Compressive Strength: 0.70 ksf Shear Strength: 0.50 ksf Penetration Resistance: 750 psi Swelling Potential: 1.0% Soil Classification: CL-ML



CLIENT TOWN OF NAGS HEAD 5401 SOUTH CROATAN HWY NAGS HEAD NC 27559		PROJECT TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT		DRAWING TITLE GEOTECHNICAL DATA CORE LOGS 82 - 102 SEDIMENT CHARACTERISTICS	
DATE May 2011		APPROVED [Signature]		PROJECT # 22042	
SCALE AS SHOWN		FILED May 2011		18	



PROJECT NO. 20 DATE: May 2011 DRAWN BY: JAN CHECKED BY: THOMAS PROJECT: 2011-02		
DRAWING TITLE: GEOTECHNICAL DATA SEDIMENT CHARACTERISTICS		
PROJECT: TOWN OF NAGS HEAD BEACH NOURISHMENT PROJECT		
CLIENT: TOWN OF NAGS HEAD 5401 SOUTH CROATAN HWY NAGS HEAD NC 27559		
 GSE Geotechnical Science & Engineering 4000 South Carolina 2002 Phone: 813-776-8888 Fax: 813-776-8888		SHEET NO. 20 TOTAL SHEETS 20

