

DEPARTMENT OF THE ARMY PERMIT

Permittee: CITY OF DESTIN
Public Services Department
4200 Indian Bayou Trail
Destin, FL 32541

Permit No: SAJ-2012-00702 (SP-TSH)

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Nourishment and stabilization of the Norriego Point peninsula. More specifically, the Permittee is authorized to:

- a. Construct 614 linear feet of harbor side seawall along the shore of the peninsula abutting Destin Harbor; restore sandy beach along shoreline.
- b. Dredge 5,000 cubic yards of sand from 1.56 acres of the federal navigation channel; dredged material will be used for nourishment of Norriego Point.
- c. Construct 327 linear feet of northwest end seawall, install rock toe protection, and install a navigation marker. This seawall will continue from the harbor side seawall, around the northern tip of Norriego Point, to the rubble mound groin. Rock protection consisting of armor stone and/or rip rap will be placed along the waterward face of the northwest end seawall and will extend no more than 20 feet waterward from the seawall.
- d. Repair and extend two existing groins (southern spur groin and southernmost T-head groin).
- e. Remove an existing, derelict groin; construct two new T-head groins and a rubble mound groin. The existing derelict groin will be excavated and removed prior to construction of a new groin in its place. Construct an 84-foot by 267-foot T-head groin, a 54-foot by 261-foot T-head groin, and a 62-foot by 245-foot rubble mound groin.

- f. Construct 250 linear feet of cross-shore bulkhead.
- g. Discharge beach compatible sand within the nourishment areas as it becomes available; sand will be discharged over within 2.8 acres (122,000 square feet) of open waters for the purpose of restoring the peninsula. Approximately 105,000 cubic yards of sand will be placed within the project limits to achieve the design elevation of +7 feet NAVD.
- h. Construct dune features and establish vegetation.

Construction of the project may be phased and will follow the above sequence based on availability of funds and beach compatible sand. Armor stones and rip rap will be transported to the site primarily by barge. The total area (footprint) of all the stone armoring (rock toe protection, rubble mound groin, two new t-groins, and two existing groins to be improved) will be 3.55 acres (155,000 square feet) and will utilize approximately 12,900 cubic yards of stone. Geotextile fabric and 12-inch thick marine mattress consisting of and 2 – 4 inch diameter granite stone will be used as a base for the new t-head groins and the rubble mound groin.

The work described above is to be completed in accordance with the 15 pages of drawings affixed at the end of this permit instrument. (**Attachment 1**)

Project Location: The project is located in East Pass and Destin Harbor, at the Norriego Point peninsula, northwest of the western terminus of Gulf Shore Drive, Sections 25 and 26, Township 2 South, Range 23 West, Destin, Okaloosa County, Florida.

Directions to site: In Destin, travel east on U.S. Highway 98 (Harbor Boulevard), approximately 0.2 mile east of Main Street, turn right (south) on Gulf Shore Drive. Travel to the public parking area at the western end of Gulf Shore Drive. Project is located northwest of the parking area.

Approximate Central Coordinates: Latitude: 30.391757° North
Longitude: 86.511202° West

Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on **October 28, 2018**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions. (**Attachment 2**)

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. **Reporting Address:** All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following address: U.S. Army Corps of Engineers, Enforcement Section, 41 North Jefferson Street, Suite

301, Pensacola, Florida, 32502. The Permittee shall reference the permit number, SAJ-2012-00702 (SP-TSH), on all submittals.

2. Commencement Notification: Within 10 days from the date of initiating the authorized work, the Permittee shall provide to the Corps a written notification of the date of commencement of work authorized by this permit; separate notification is required for each distinct event conducted under authority of this permit. (i.e., discharge of material below the high tide line, within the permit area, from any source, including material obtained from federal maintenance dredging projects, upland sources, or relocation of material dredged under authorization SAJ-2007-04911)

3. As-Built Survey: Within 60 days of completing work, the Permittee shall provide an as-built survey of the completed dredging documenting the post-dredge condition of the federal navigation channel. The survey is required only for the portions of the channel where dredging occurs. The as-built survey shall be provided to the Mobile District Corps of Engineers at the following address: ATTN: CESAM-OP-GE, 1706 East 5th Street, Panama City, Florida 32401-0151. The as-built survey shall also be provided to the Jacksonville District Corps of Engineers at the following address: Special Projects and Enforcement Branch, 41 North Jefferson Street, Suite 301, Pensacola, Florida 32502.

4. As-Built Certification: Within 60 days of completion of the authorized work or at the expiration of the construction authorization of this permit, whichever occurs first, the Permittee shall submit as-built drawings of the authorized work (nourished/stabilized peninsula) and a completed As-Built Certification Form (**Attachment 3**) to the Corps. The drawings shall be signed and sealed by a registered professional engineer and include the following:

a. A plan view drawing of the location of the authorized work footprint (as shown on the permit drawings) with an overlay of the work as constructed in the same scale as the attached permit drawings (8½-inch by 11-inch). The drawing should show all "earth disturbance," including wetland impacts, water management structures, and any on-site mitigation areas.

b. List any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the As-Built Certification Form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or As-Built Certification Form does not constitute approval of any deviations by the U.S. Army Corps of Engineers.

c. The Department of the Army Permit number.

d. Include pre- and post-construction aerial photographs of the project site, if available.

5. Assurance of Navigation and Maintenance: The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

6. Fill Material: The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance, in toxic amounts in accordance with Section 307 of the Clean Water Act.

7. Sea Turtle and Smalltooth Sawfish Conditions: The Permittee shall comply with the attached standard *Sea Turtle and Smalltooth Sawfish Construction Conditions* designed to protect the endangered Smalltooth Sawfish and threatened/endangered Sea Turtles (**Attachment 4**). The Permittee shall also apply these conditions to the threatened Gulf sturgeon.

8. Manatee Conditions: The Permittee agrees to abide by conditions a, b, d, and e of the standard construction conditions designed to protect the endangered West Indian manatee (Conditions c and f have been omitted as they are not currently applicable within the geographic location of the proposed project):

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK
2011

The Permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The Permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act,

the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.

9. Endangered Species: This Corps permit does not authorize you to take an endangered species, in particular the threatened loggerhead sea turtle (*Caretta caretta*), endangered green sea turtle (*Chelonia mydas*), endangered leatherback sea turtle (*Dermochelys coriacea*), endangered Kemp's Ridley sea turtle (*Lepidochelys kempi*), endangered hawksbill sea turtle (*Eretmochelys imbricata*), or threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*). In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an ESA section 10 permit, or a Biological Opinion under ESA section 7, with "incidental take" provisions with which you must comply). The enclosed National Marine Fisheries Service (NMFS) Biological Opinion, dated April 19, 2013 (**Attachment 5**), does not authorize "incidental take" of any species and therefore does not contain mandatory terms and conditions. The Permittee shall immediately report to the Jacksonville District Corps' Pensacola Regulatory Office the take of any federally protected species that may occur as a result of activities associated with this authorization; take of a species includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.

10. Cultural Resources/Historic Properties:

a. No structure or work shall adversely affect impact or disturb properties listed in the *National Register of Historic Places* (NRHP) or those eligible for inclusion in the NRHP.

b. If during the ground disturbing activities and construction work within the permit area, there are archaeological/cultural materials encountered which were not the subject of a previous cultural resources assessment survey (and which shall include, but not be limited to: pottery, modified shell, flora, fauna, human remains, ceramics, stone tools or metal implements, dugout canoes, evidence of structures or any other physical remains that could be associated with Native American cultures or early colonial or American settlement), the Permittee shall immediately stop all work and ground-disturbing activities within a 100-meter diameter of the discovery and notify the Corps within the same business day (8 hours). The Corps shall then notify the Florida State Historic Preservation Officer (SHPO) and the appropriate Tribal Historic Preservation Officer(s) (THPO(s)) to assess the significance of the discovery and devise appropriate actions.

c. Additional cultural resources assessments may be required of the permit area in the case of unanticipated discoveries as referenced in accordance with the above Special Condition ; and if deemed necessary by the SHPO, THPO(s), or Corps, in accordance with 36 CFR 800 or 33 CFR 325, Appendix C (5). Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume on non-federal lands without written authorization from the SHPO for finds under his or her jurisdiction, and from the Corps.

d. In the unlikely event that unmarked human remains are identified on non-federal lands, they will be treated in accordance with Section 872.05 Florida Statutes. All work and ground disturbing activities within a 100-meter diameter of the unmarked human remains shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archeologist within the same business day (8-hours). The Corps shall then notify the appropriate SHPO and THPO(s). Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume without written authorization from the State Archeologist and from the Corps.

11. Regulatory Agency Changes: Should any other regulatory agency require changes to the work authorized or obligated by this permit, the Permittee is

advised that a modification to this permit instrument is required prior to initiation of those changes. It is the Permittee's responsibility to request a modification of this permit from the Pensacola Regulatory Office.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

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PERMIT NUMBER: SAJ-2012-00702 (SP-TSH)
PERMITTEE: City of Destin
PAGE 10 of 12

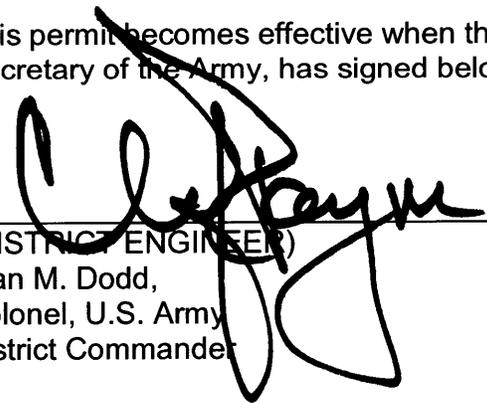
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.


(PERMITTEE)

10-30-13
(DATE)

Maryann I. Ustick
(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.


(DISTRICT ENGINEER)
Alan M. Dodd,
Colonel, U.S. Army
District Commander

7 Nov 2013
(DATE)

PERMIT NUMBER: SAJ-2012-00702 (SP-TSH)
PERMITTEE: City of Destin
PAGE 11 of 12

Transfer Request

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE-SIGNATURE)

(DATE)

(NAME-PRINTED)

(ADDRESS)

(CITY, STATE, AND ZIP CODE)

PERMIT NUMBER: SAJ-2012-00702 (SP-TSH)
PERMITTEE: City of Destin
PAGE 12 of 12

**Attachments to Department of the Army
Permit Number SAJ-2012-00702 (SP-TSH)**

1. **PERMIT DRAWINGS:** Fifteen (15) pages, dated October 11, 2013.

2. **WATER QUALITY CERTIFICATION:** Specific Conditions of the water quality permit/certification in accordance with General Condition number 5 on page 2 of this DA permit. Florida Department of Environmental Protection permit number 0175572-003-JC, issued on June 24, 2013. Thirteen (13) pages.

3. **AS-BUILT CERTIFICATION FORM:** Two (2) pages.

4. **SEA TURTLE – SMALLTOOTH SAWFISH CONDITIONS:** One (1) page. *Sea Turtle and Smalltooth Sawfish Construction Conditions*, revised March 23, 2006.

5. **BIOLOGICAL OPINION:** National Marine Fisheries Service (NMFS) Biological Opinion, dated April 19, 2013. Twenty seven (27) pages.

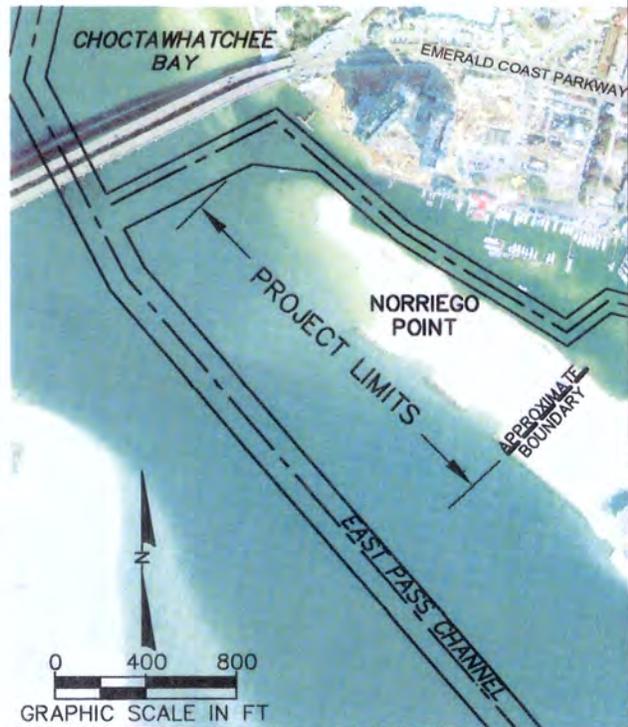
NORRIEGO POINT
STABILIZATION PROJECT
CITY OF DESTIN
OKALOOSA COUNTY, FLORIDA



NORRIEGO POINT STABILIZATION PROJECT
COVER SHEET

INDEX TO SHEETS

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2-4	PROJECT PLAN VIEW
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12	PROPOSED OVERALL PLAN VIEW
13-15	PROJECT PLAN VIEW WITHOUT AERIAL IMAGERY
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27	ROCK ALTERNATIVE OVERALL PLAN VIEW
28-30	ROCK ALTERNATIVE PLAN VIEW WITHOUT AERIAL IMAGERY



COASTAL PLANNING & ENGINEERING, INC.
P.L. 0871 301-4102
P.O. 0871 301-4116
C.O.A. FL. 60228
2841 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33411
www.CoastalPlanning.com



DATE:
2/14/12

BY:
HV

COMM NO.:

142474
SHEET:
1

NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DOUGLAS W. MANN P.E. NO. 44046

City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 1 of 15



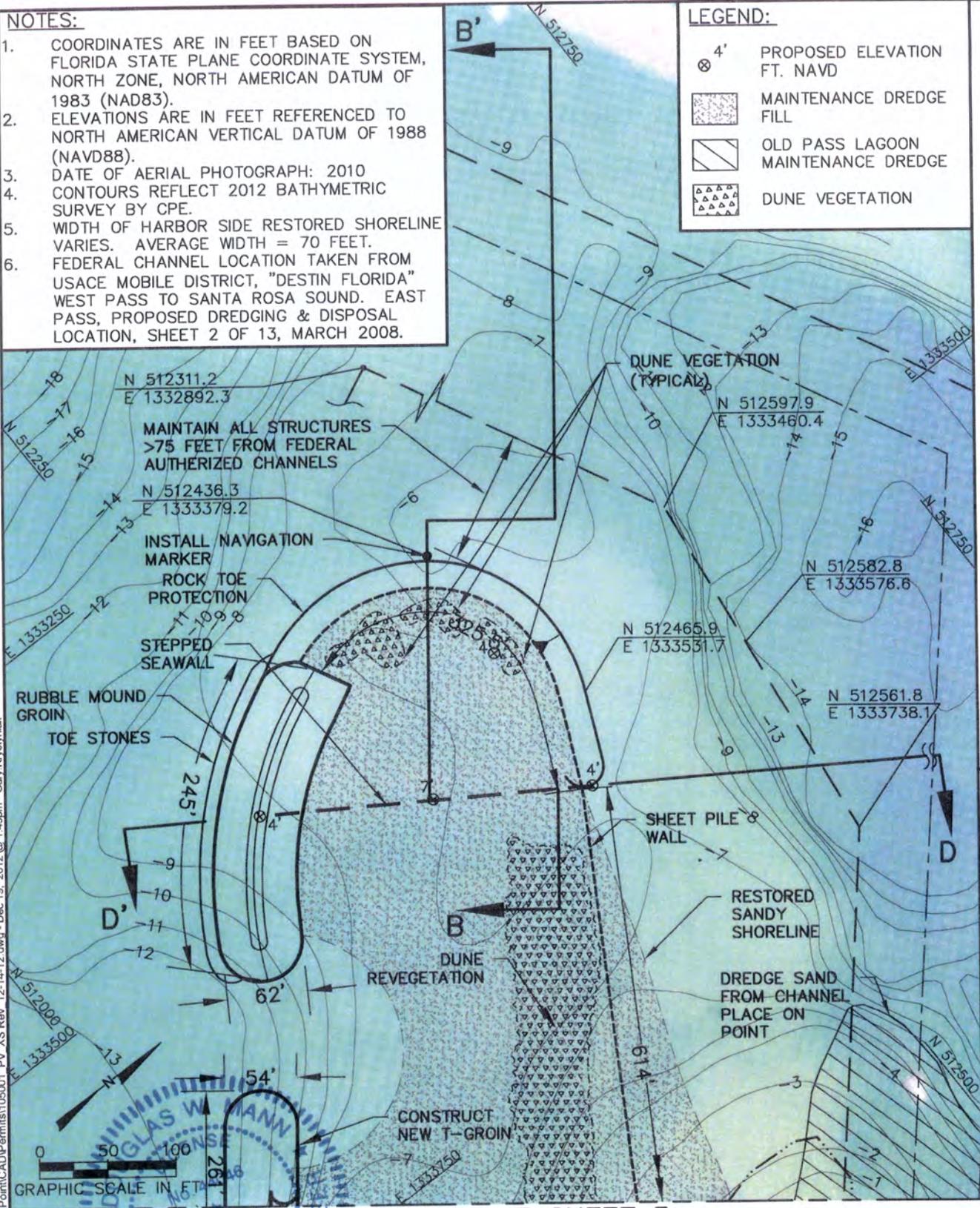
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NOTES:

1. COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. DATE OF AERIAL PHOTOGRAPH: 2010
4. CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.
5. WIDTH OF HARBOR SIDE RESTORED SHORELINE VARIES. AVERAGE WIDTH = 70 FEET.
6. FEDERAL CHANNEL LOCATION TAKEN FROM USACE MOBILE DISTRICT, "DESTIN FLORIDA" WEST PASS TO SANTA ROSA SOUND. EAST PASS, PROPOSED DREDGING & DISPOSAL LOCATION, SHEET 2 OF 13, MARCH 2008.

LEGEND:

- ⊗ 4' PROPOSED ELEVATION FT. NAVD
- [Stippled Box] MAINTENANCE DREDGE FILL
- [Diagonal Lines Box] OLD PASS LAGOON MAINTENANCE DREDGE
- [Triangle Pattern Box] DUNE VEGETATION



**NORRIEGO POINT STABILIZATION PROJECT
PLAN VIEW**

**COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY**
2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
www.CoastalPlanning.net
PH (954) 391-8102
FAX (954) 391-8116
C.O.A. #L 44028



DATE: 2/14/12
BY:

HV
COMM NO.: 142474
SHEET: 2

MATCH LINE SHEET 3

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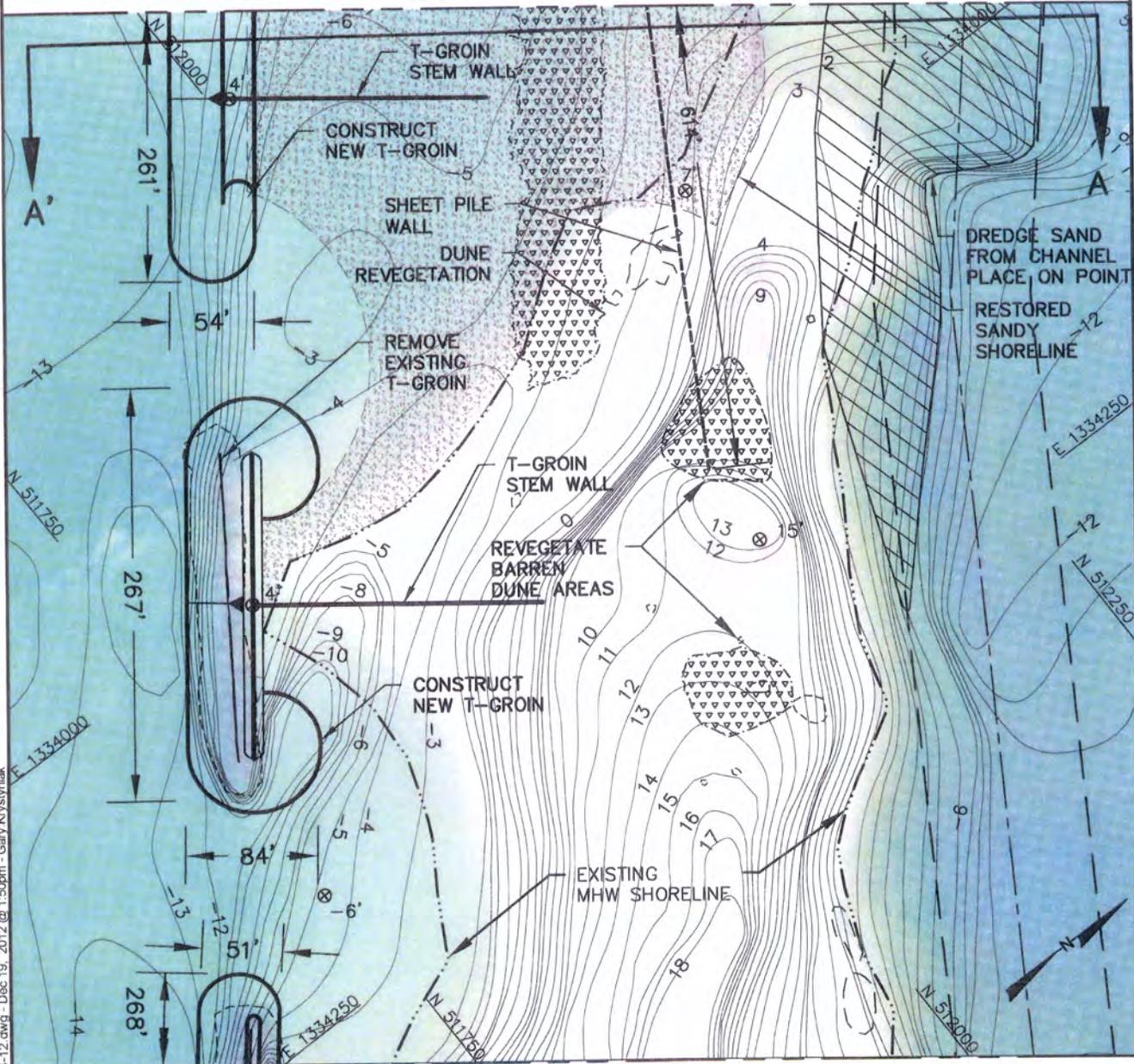
DOUGLAS W. MANN P.E. NO. 44046

City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 2 of 15



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**NORRIEGO POINT STABILIZATION PROJECT
 PLAN VIEW**

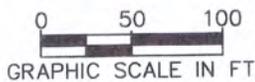
MATCH LINE SHEET 4

NOTES:

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- ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- DATE OF AERIAL PHOTOGRAPH: 2010
- CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.

LEGEND:

- 4' PROPOSED ELEVATION FT. NAVD
- MAINTENANCE DREDGE FILL
- OLD PASS LAGOON MAINTENANCE DREDGE
- DUNE VEGETATION



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DOUGLAS W. MANN P.E. NO. 44046

City of Destin
 SAJ-2012-00702 (SP-TSH)
 October 28, 2013
 Permit Drawings: 3 of 15

REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

COASTAL PLANNING & ENGINEERING, INC.
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 FAX: (954) 391-9116
 C.O.A. FL. #4025
 www.CoastalPlanning.com



DATE:
2/14/12

BY:
HV

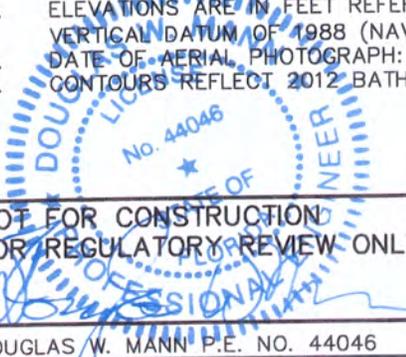
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142474

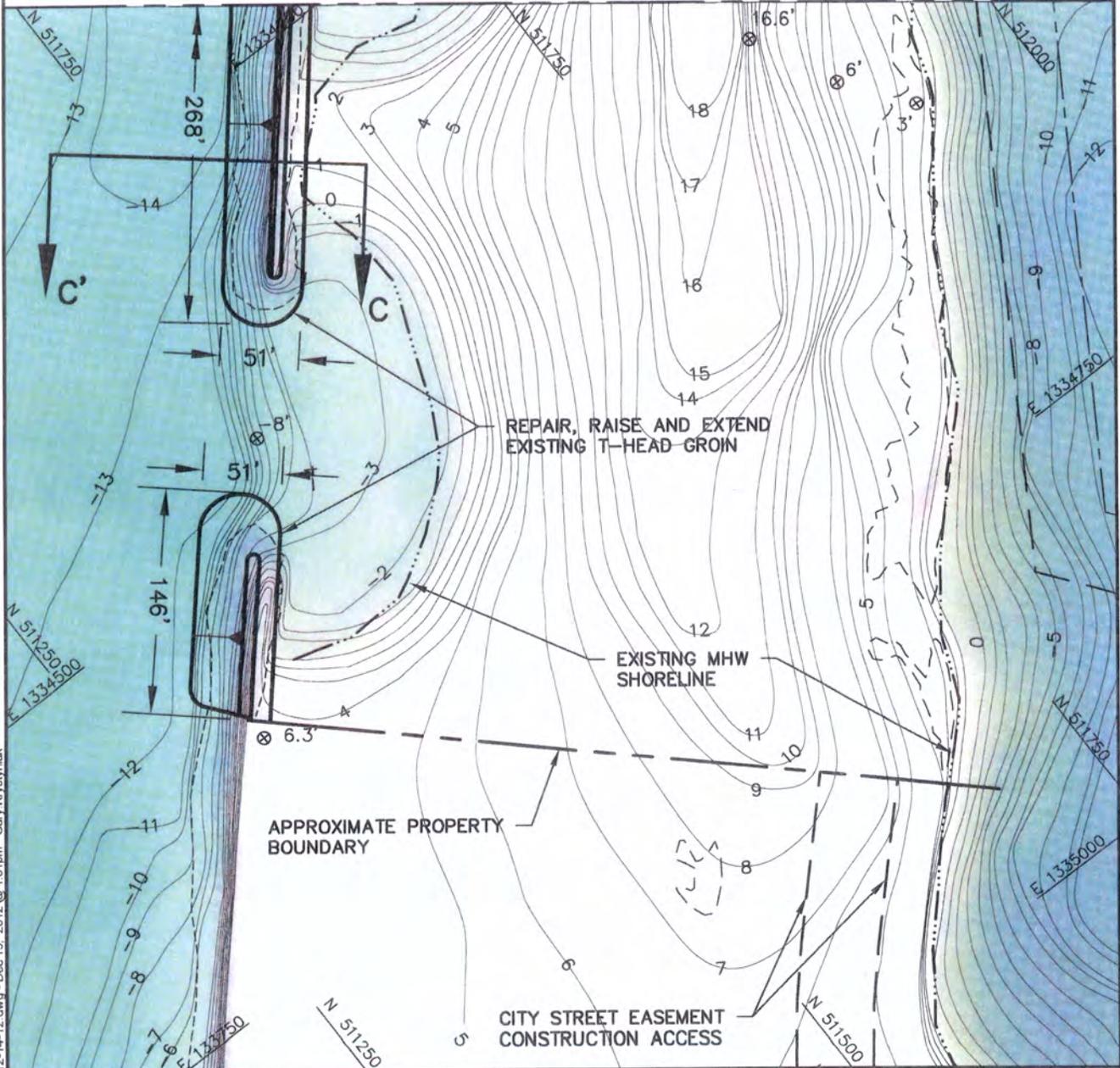
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3



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MATCH LINE SHEET 3



**NORRIEGO POINT STABILIZATION PROJECT
PLAN VIEW**

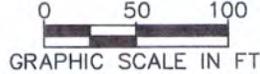
COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
 2481 N.W. BOCA RATON BOULEVARD
 BOCA RATON, FLORIDA 33431
 PH: (954) 391-5102
 FAX: (954) 391-5116
 www.CoastalPlanning.com
 C.O.A. FL. 54029

NOTES:

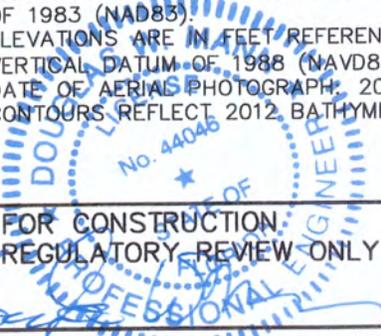
1. COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
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4. CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.

LEGEND:

⊗ 4' PROPOSED ELEVATION FT. NAVD



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DOUGLAS W. MANN P.E. NO. 44046

City of Destin
 SAJ-2012-00702 (SP-TSH)
 October 28, 2013
 Permit Drawings: 4 of 15



REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

DATE: 2/14/12
 BY: HV
 COMM NO.: 142474
 SHEET: 4

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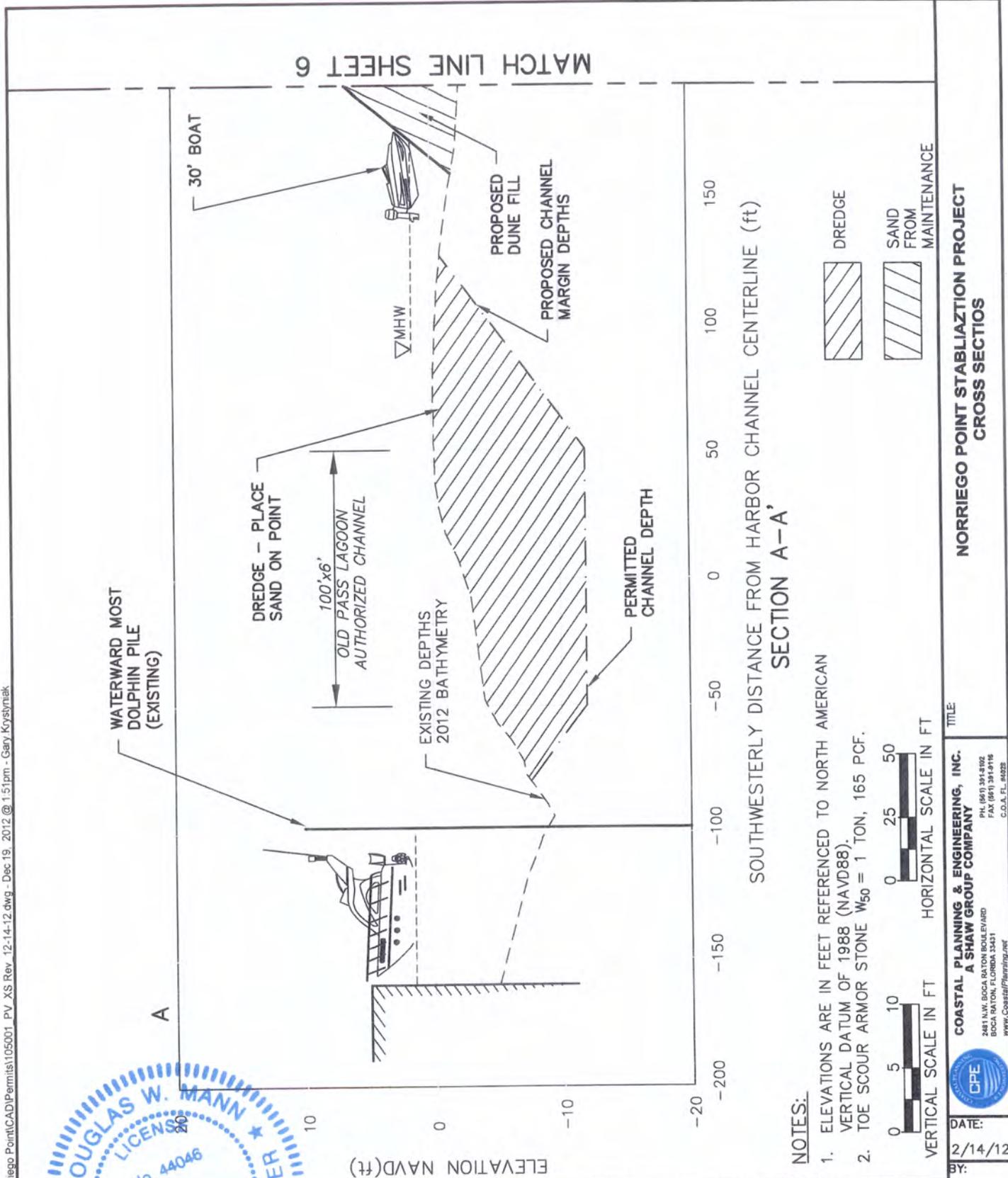
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October 28, 2013
Permit Drawings: 5 of 15



MATCH LINE SHEET 6

SOUTHWESTERLY DISTANCE FROM HARBOR CHANNEL CENTERLINE (ft)

SECTION A-A'

- NOTES:
- ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 - TOE SCOUR ARMOR STONE $W_{50} = 1$ TON, 165 PCF.

VERTICAL SCALE IN FT
HORIZONTAL SCALE IN FT

NORRIEGO POINT STABILIZATION PROJECT
CROSS SECTIONS

COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
PH: (954) 394-8902
FAX: (954) 394-9116
www.CoastalPlanning.net
C.O.A. FL. #025

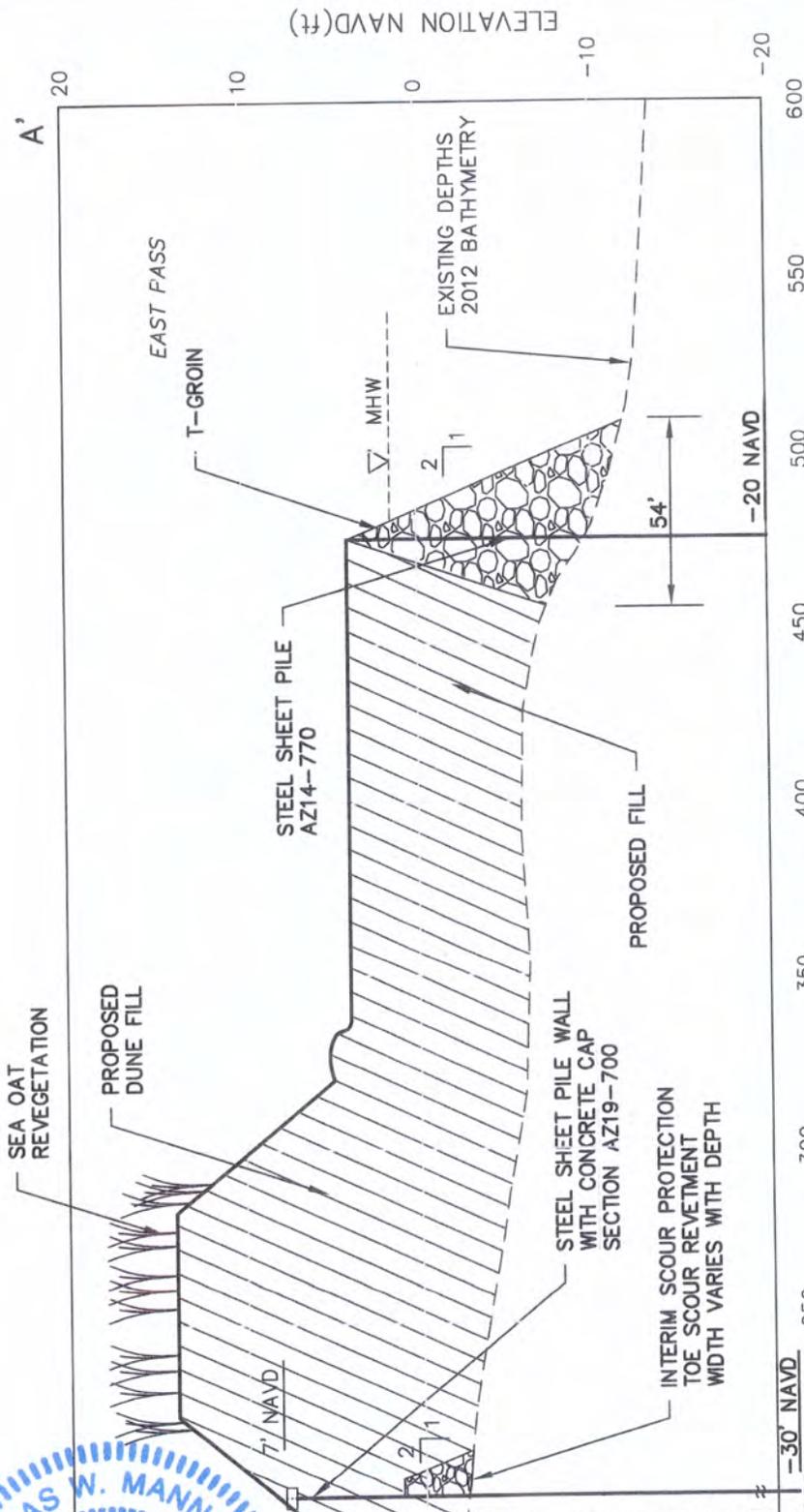


DATE: 2/14/12
BY: HV

REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

COMM NO.: 142474
SHEET: 5

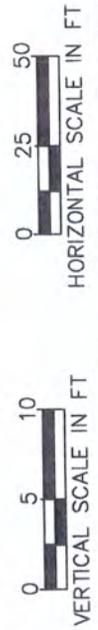
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SECTION A-A'
SOUTHWESTERLY DISTANCE FROM HARBOR CHANNEL CENTERLINE (ft)

NOTES:

1. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. ARMOR STONE = 3 TON, 165 PCF.
3. FOUNDATION STONE 0.75' DIA. ON GEOTEXTILE OR TRITON MARINE MATTRESS.



MATCH LINE SHEET 5

NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DOUGLAS W. MANN
LICENSE No. 44048
FLORIDA PROFESSIONAL ENGINEER

DOUGLAS W. MANN P.E. NO. 44046

City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 6 of 15



REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

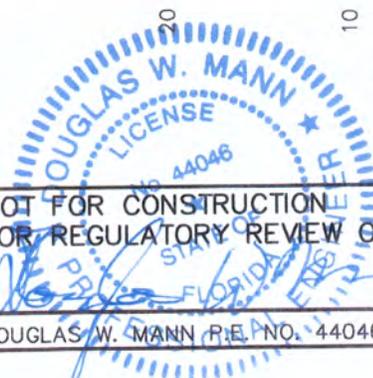
DATE:	2/14/12
BY:	HV
COMM NO.:	142474
SHEET:	6

TITLE

COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY

2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
PH: (561) 394-8100
FAX: (561) 394-5116
C.O.A. FL. #4028
www.CoastalPlanning.net

**NORRIEGO POINT STABILIZATION PROJECT
CROSS SECTIONS**



NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

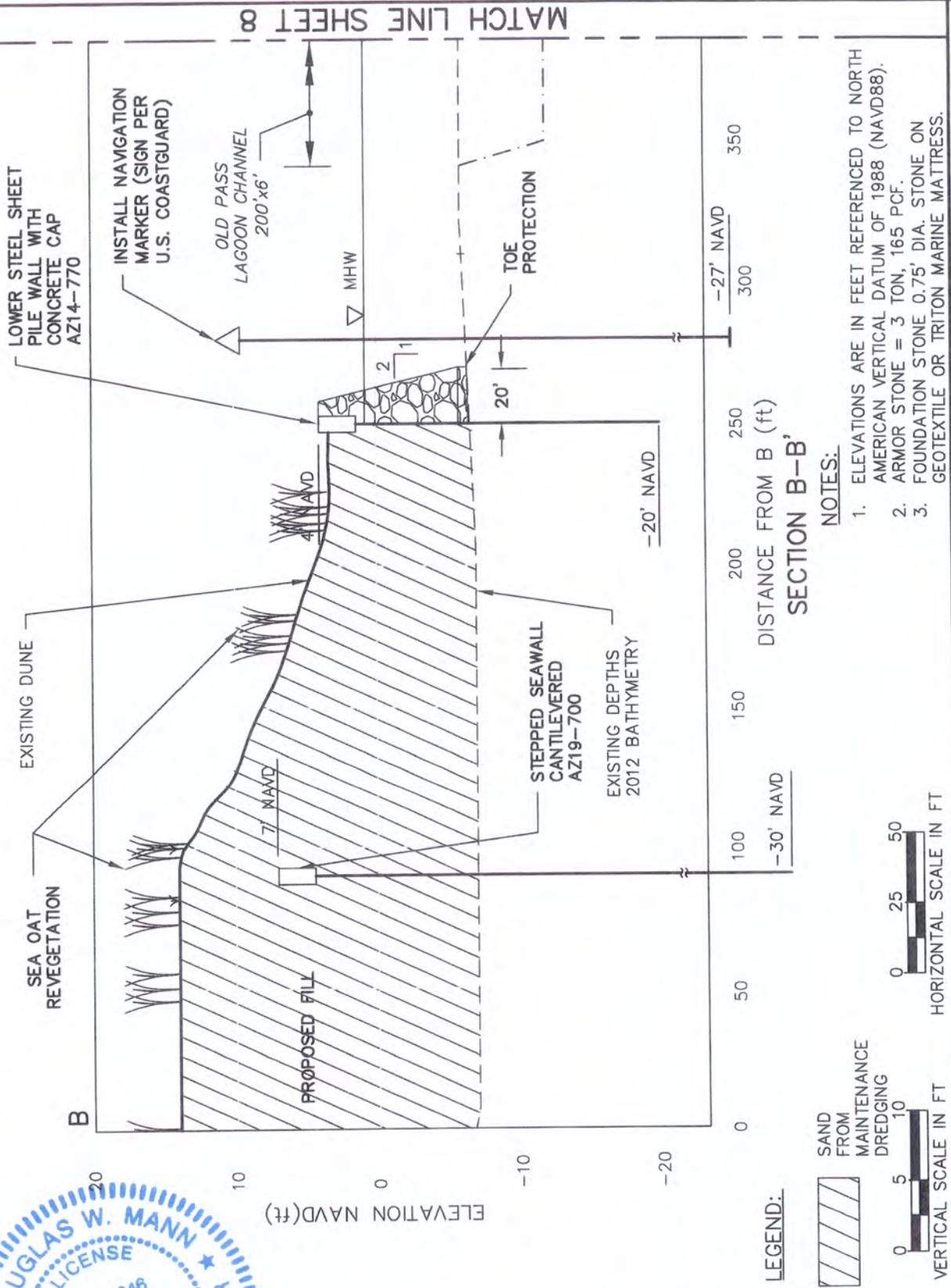
DOUGLAS W. MANN P.E. NO. 44046

City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 7 of 15



REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

DATE:	2/14/12
BY:	HV
COMM. NO.:	142474
SHEET:	7

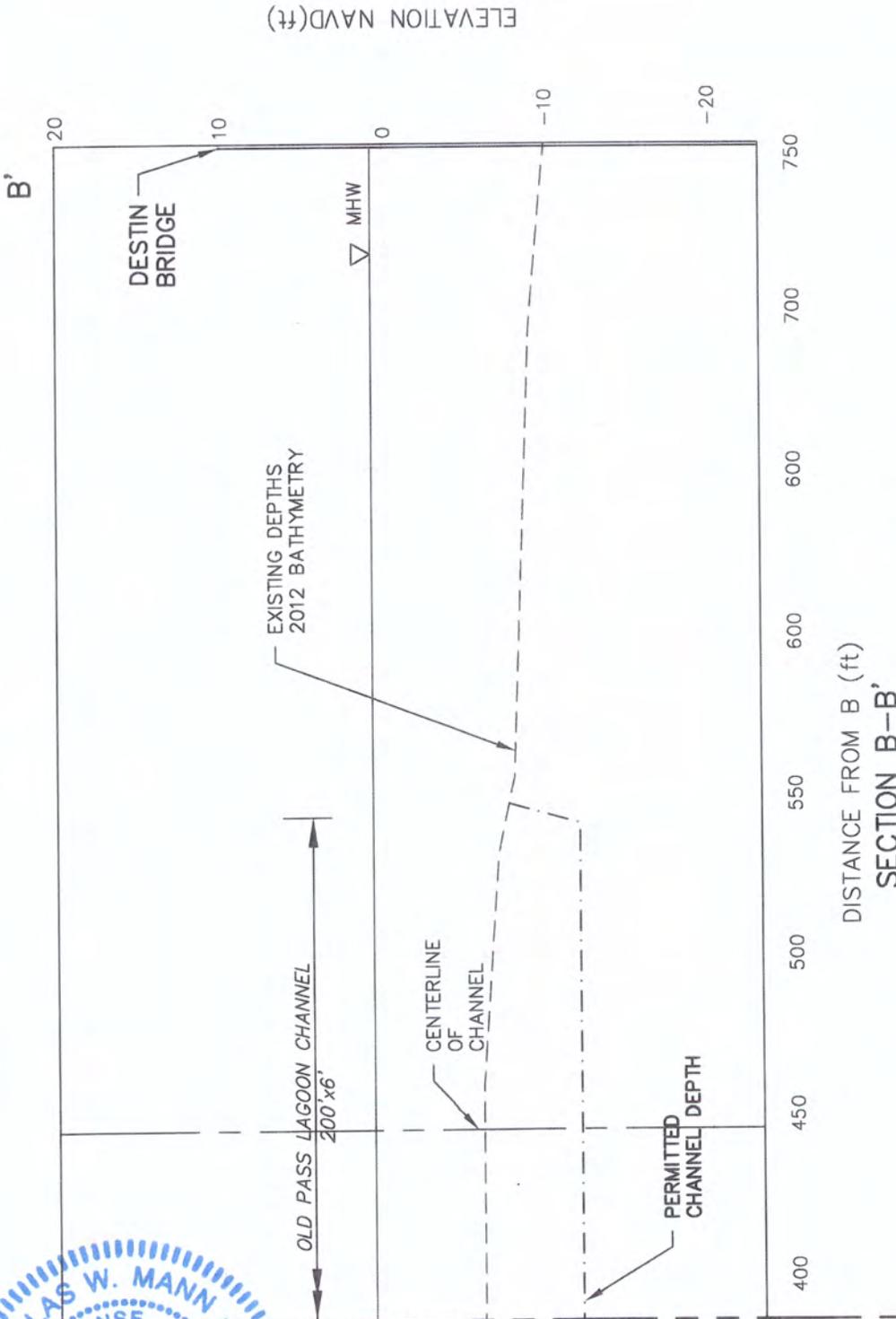


- NOTES:
- ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 - ARMOR STONE = 3 TON, 165 PCF.
 - FOUNDATION STONE 0.75' DIA. STONE ON GEOTEXTILE OR TRITON MARINE MATTRESS.

**NORRIEGO POINT STABILIZATION PROJECT
CROSS SECTIONS**

TITLE:
COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
2481 NW BSCA BLVD., SUITE 100, DEERFIELD BEACH, FLORIDA 33441
PH: (561) 394-8302
FAX: (561) 394-9116
www.CoastalPlanning.net
C.O.A. FL. #4023

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NOTES:

- ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SECTION B-B'

**NORRIEGO POINT STABILIZATION PROJECT
CROSS SECTIONS**

COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
www.CoastalPlanning.net
PH: (954) 391-8102
FAX: (954) 391-8116
C.O.A.F.L. #0029



DATE:	2/14/12
BY:	HV
COMM NO.:	142474
SHEET:	8

NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

DOUGLAS W. MANN P.E. NO. 44046

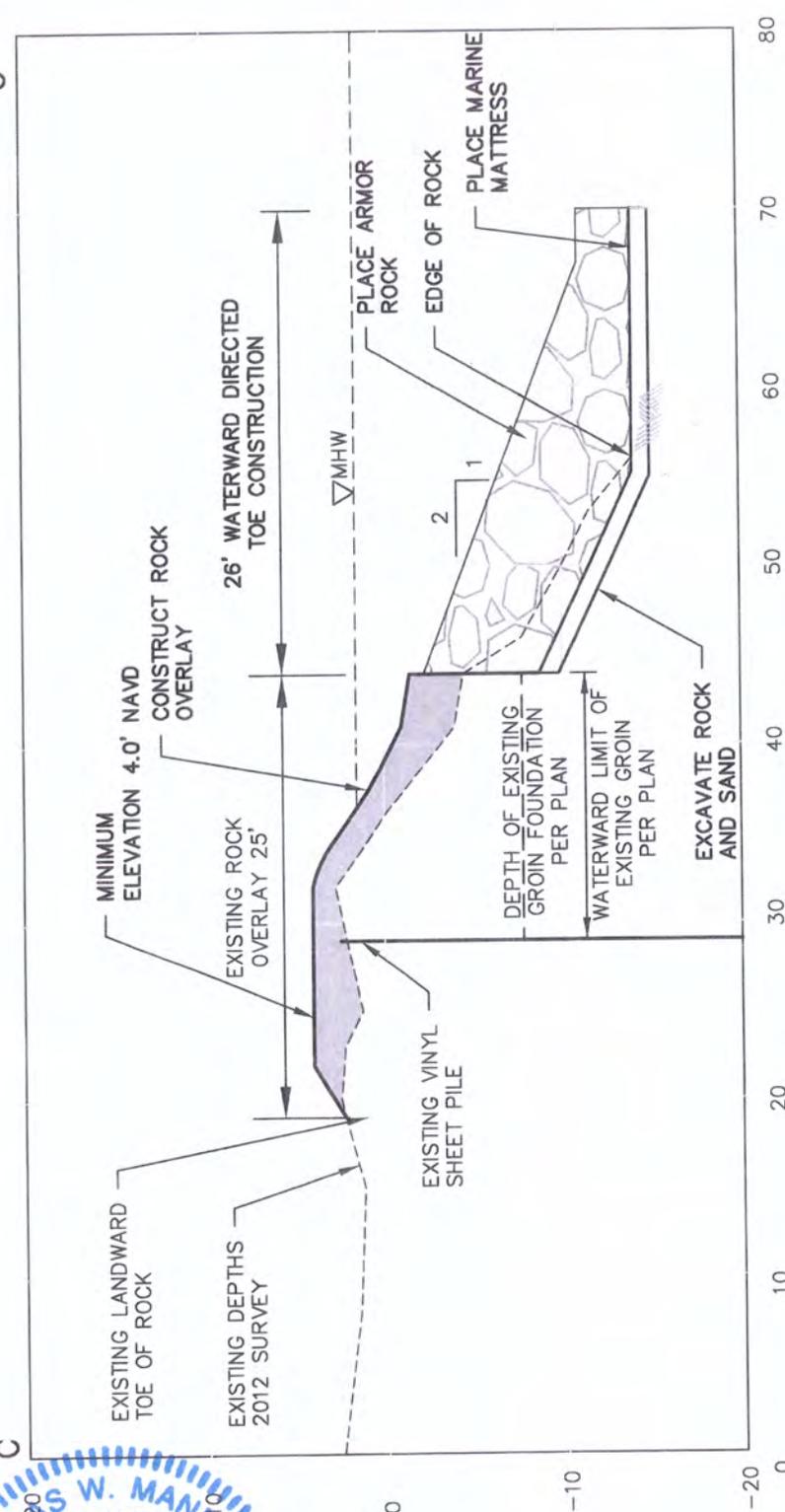
City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 8 of 15



REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

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C'



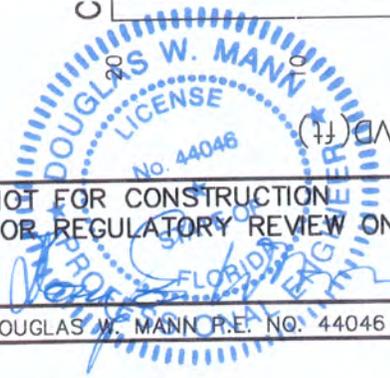
DISTANCE ALONG C-C' (ft)
SECTION C-C'

NOTES:

1. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. ARMOR STONE = 3 TON, 165 PCF.
3. FOUNDATION TRITON MARINE MATTRESS.
4. REFERENCE TO EXISTING GROIN DIMENSIONS FROM HUMISTON AND MOORE (2000).



NOT FOR CONSTRUCTION
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DOUGLAS W. MANN P.E. NO. 44046

City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 9 of 15



REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

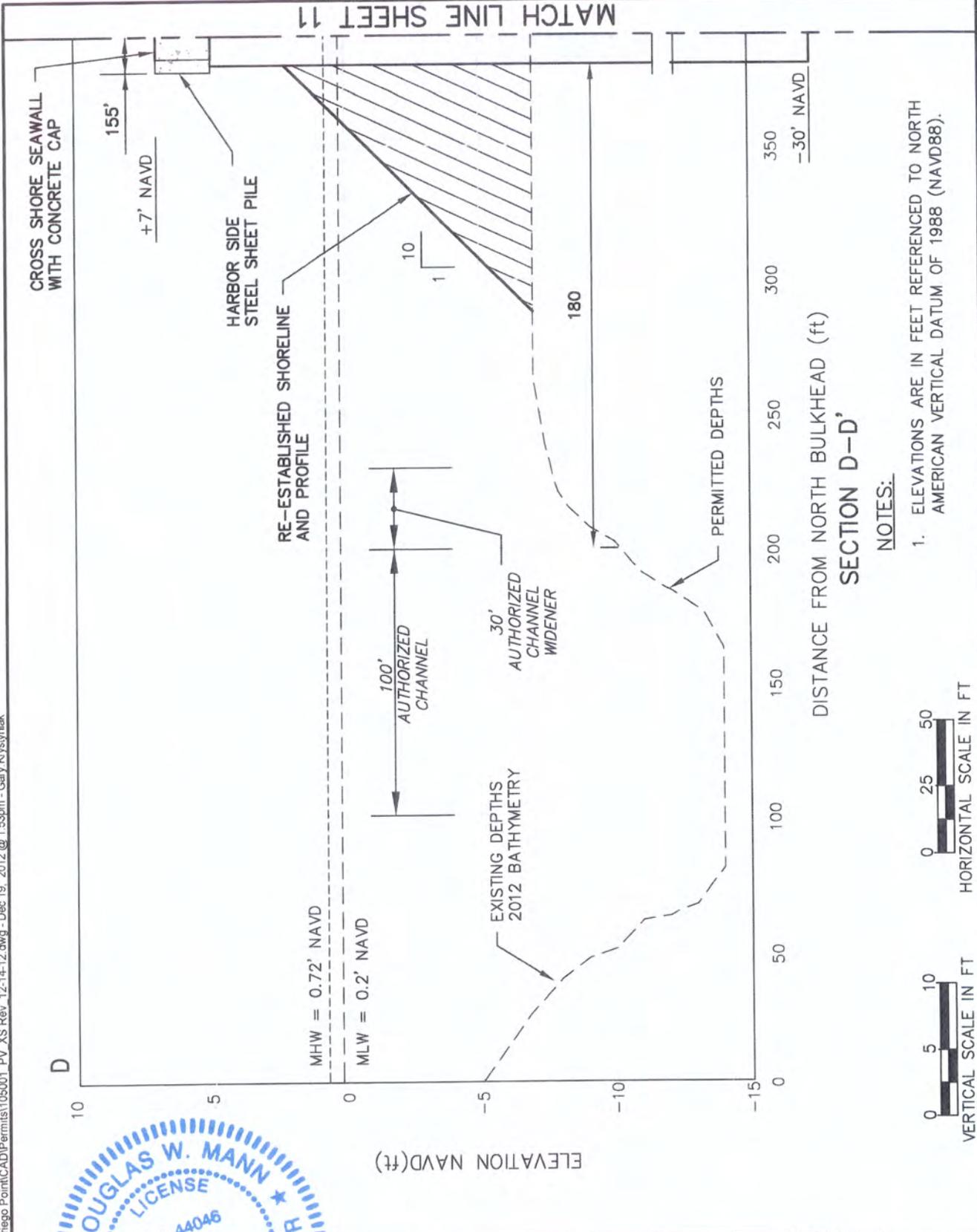
DATE:	2/14/12
BY:	HV
COMM NO.:	142474
SHEET:	9

CPE
COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
 2481 N.W. BOCA RATON BOULEVARD
 BOCA RATON, FLORIDA 33431
 www.CoastalPlanning.net
 PH: (561) 394-6592
 FAX: (561) 391-9116
 C.O.S. FL. #4228

**NORRIEGO POINT STABILIZATION PROJECT
CROSS SECTIONS**

TITLE

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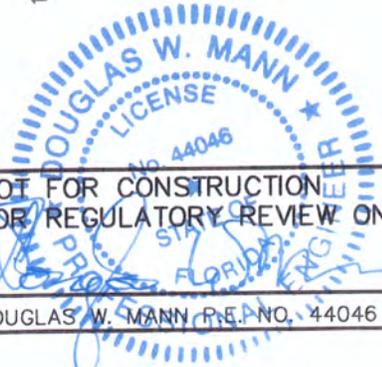
SECTION D-D'
 DISTANCE FROM NORTH BULKHEAD (ft)

NOTES:
 1. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

VERTICAL SCALE IN FT: 0, 5, 10
 HORIZONTAL SCALE IN FT: 0, 25, 50

NOT FOR CONSTRUCTION FOR REGULATORY REVIEW ONLY

DOUGLAS W. MANN, P.E., NO. 44046



REVISIONS	
DATE	DESCRIPTION
4/3/12	DM USACE RAI #1
12/16/12	DM CITY REALIGNMENT

DATE: 2/14/12
 BY: HV
 COMM NO.: 142474
 SHEET: 10

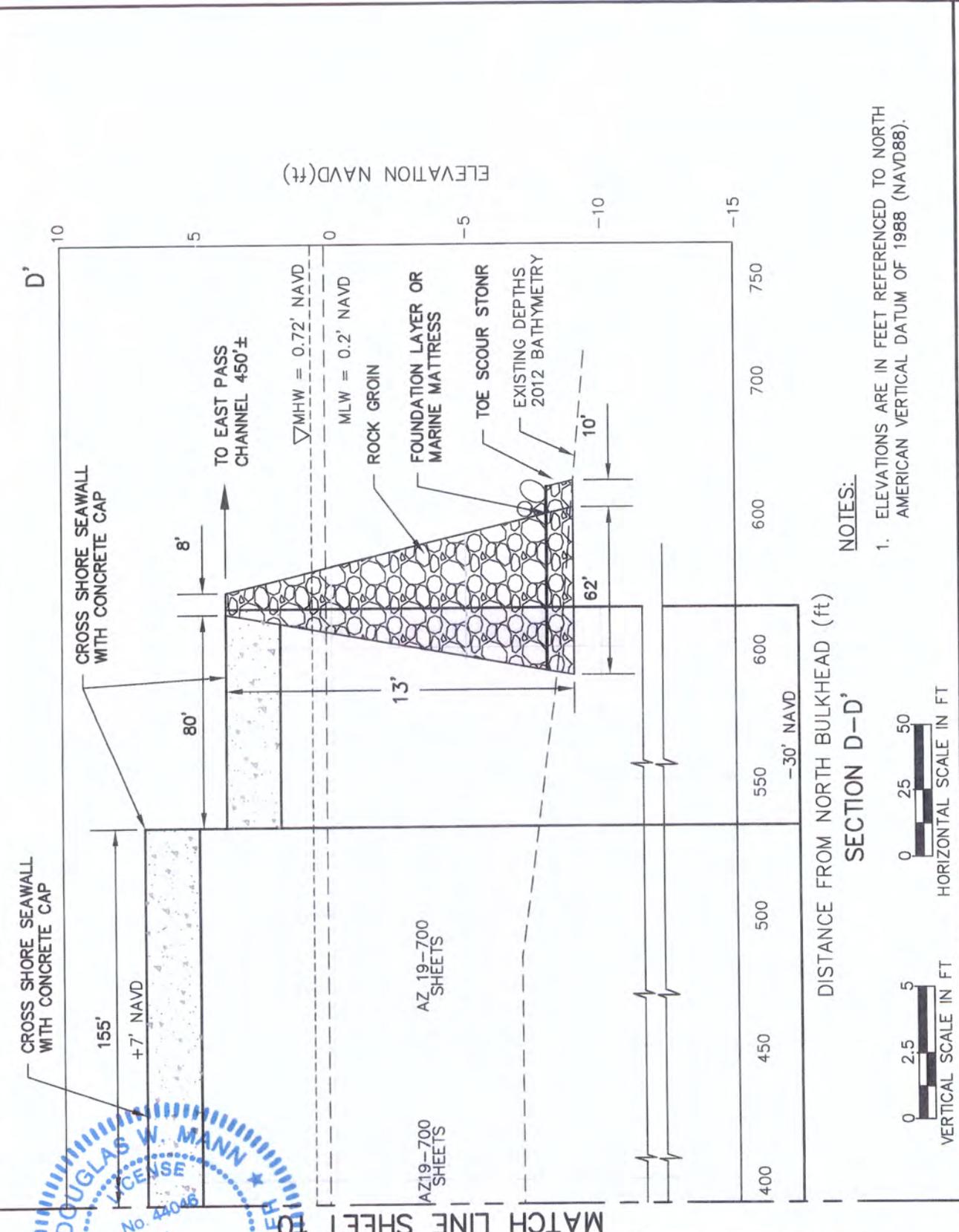
City of Destin
 SAJ-2012-00702 (SP-TSH)
 October 28, 2013
 Permit Drawings: 10 of 15



**NORRIEGO POINT STABILIZATION PROJECT
 CROSS SECTIONS**

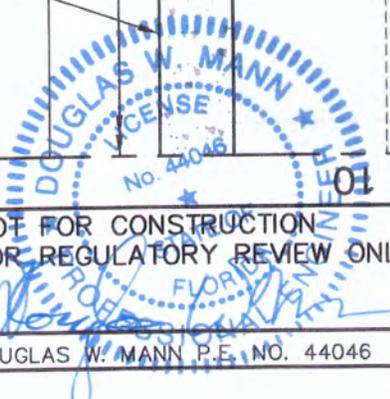
COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
 2481 N.W. BOCA RATON BOULEVARD
 BOCA RATON, FLORIDA 33431
 PH: (954) 394-8892
 FAX: (954) 394-6896
 www.CoastalPlanning.net
 C.O.A. FL. #629

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FOR REGULATORY REVIEW ONLY

DOUGLAS W. MANN P.E. NO. 44046



MATCH LINE SHEET TO

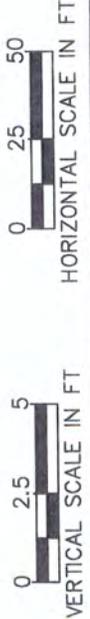
City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 11 of 15



REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

NOTES:
1. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

SECTION D-D'
DISTANCE FROM NORTH BULKHEAD (ft)



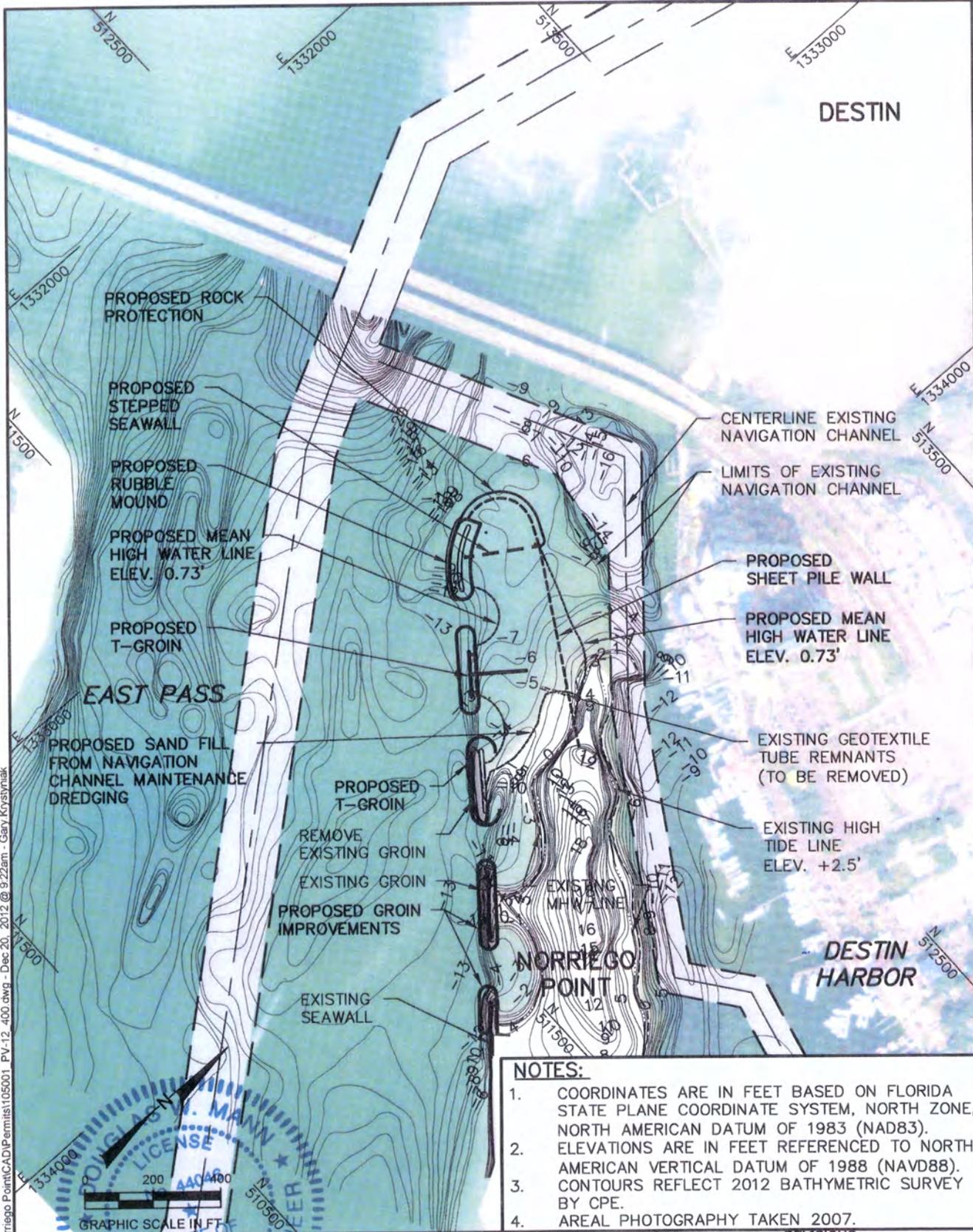
COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY

2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
www.CoastalPlanning.net

PH: (561) 391-8902
FAX: (561) 391-0476
C.O.G. #L 18429

TITLE: NORRIEGO POINT STABILIZATION PROJECT CROSS SECTIONS

DATE: 2/14/12
BY: HV
COMM NO.: 142474
SHEET: 11



**NORRIEGO POINT STABILIZATION PROJECT
 PROPOSED OVERALL PLAN VIEW
 OKALOOSA COUNTY, FLORIDA**

COASTAL PLANNING & ENGINEERING, INC.
 2485 N.W. BOCA RATON BOULEVARD
 BOCA RATON, FLORIDA 33431
 PH. (561) 391-4102
 FAX (561) 391-4116
 C.O.A. P.L. #4622
 www.CoastalPlanning.net



- NOTES:**
- COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
 - ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 - CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.
 - AREAL PHOTOGRAPHY TAKEN 2007.

**NOT FOR CONSTRUCTION
 FOR REGULATORY REVIEW ONLY**

REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY RELIGNMENT

DATE: 2/14/12
 BY: GK
 COMM NO.: 142474
 SHEET: 12

DOUGLAS W. MANN P.E. NO. 44046

City of Destin
 SAJ-2012-00702 (SP-TSH)
 October 28, 2013
 Permit Drawings: 12 of 15



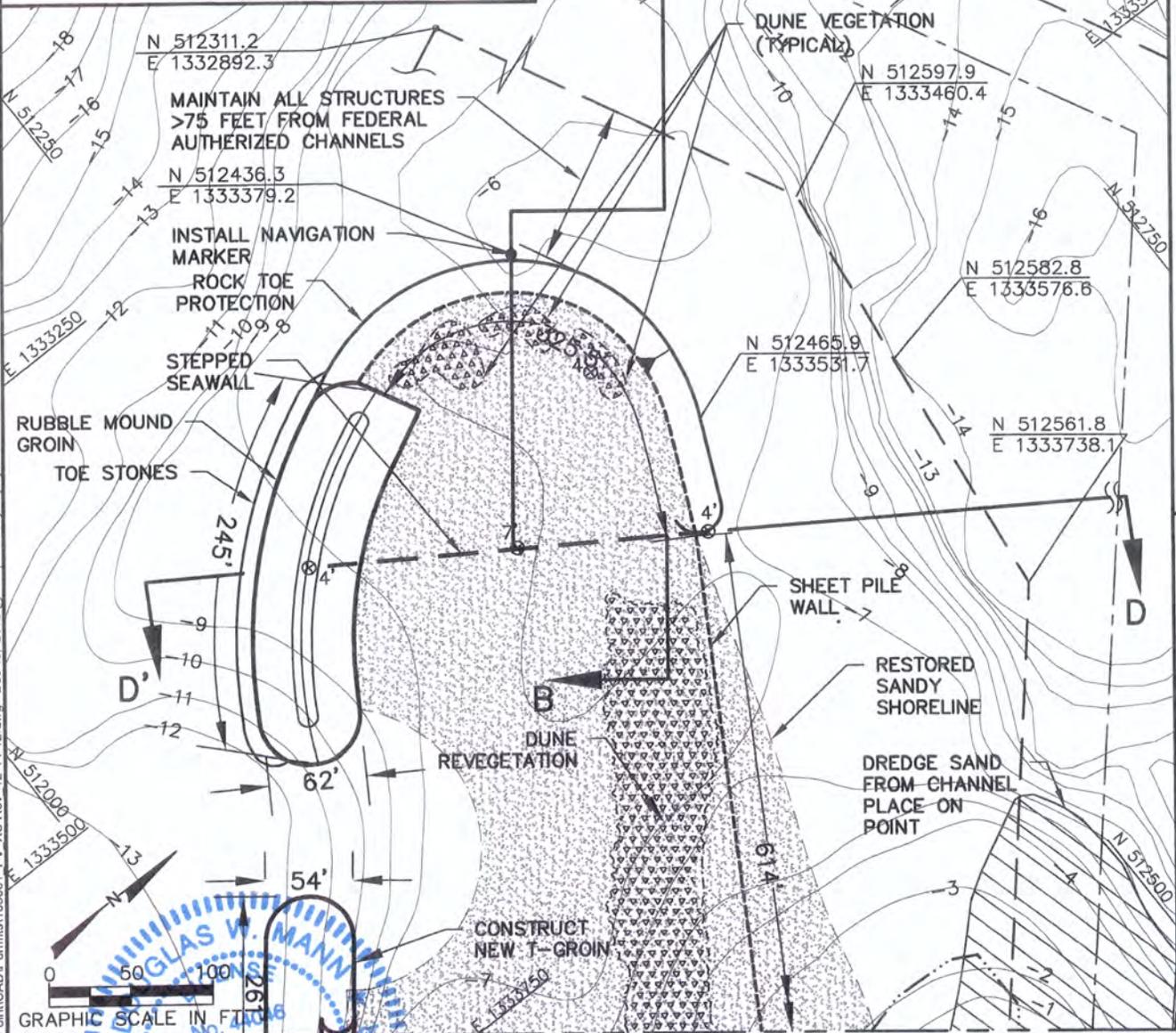
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NOTES:

1. COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.
4. WIDTH OF HARBOR SIDE RESTORED SHORELINE VARIES. AVERAGE WIDTH = 70 FEET.
5. FEDERAL CHANNEL LOCATION TAKEN FROM USACE MOBILE DISTRICT, "DESTIN FLORIDA" WEST PASS TO SANTA ROSA SOUND. EAST PASS, PROPOSED DREDGING & DISPOSAL LOCATION, SHEET 2 OF 13, MARCH 2008.

LEGEND:

- ⊗ 4' PROPOSED ELEVATION FT. NAVD
- [Stippled Box] MAINTENANCE DREDGE FILL
- [Diagonal Lines Box] OLD PASS LAGOON MAINTENANCE DREDGE
- [Triangle Pattern Box] DUNE VEGETATION



**NORRIEGO POINT STABILIZATION PROJECT
 PLAN VIEW WITHOUT AERIAL IMAGERY**

**COASTAL PLANNING & ENGINEERING, INC.
 A SHAW GROUP COMPANY**
 2481 N.W. BOCA RATON BOULEVARD
 BOCA RATON, FLORIDA 33431
 PH: (954) 391-9102
 FAX: (954) 391-9116
 C.O.A. # 96209
 www.CoastalPlanning.net



DATE: 2/14/12
 BY: HV

COMM NO.: 142474
 SHEET: 13

**NOT FOR CONSTRUCTION
 FOR REGULATORY REVIEW ONLY**

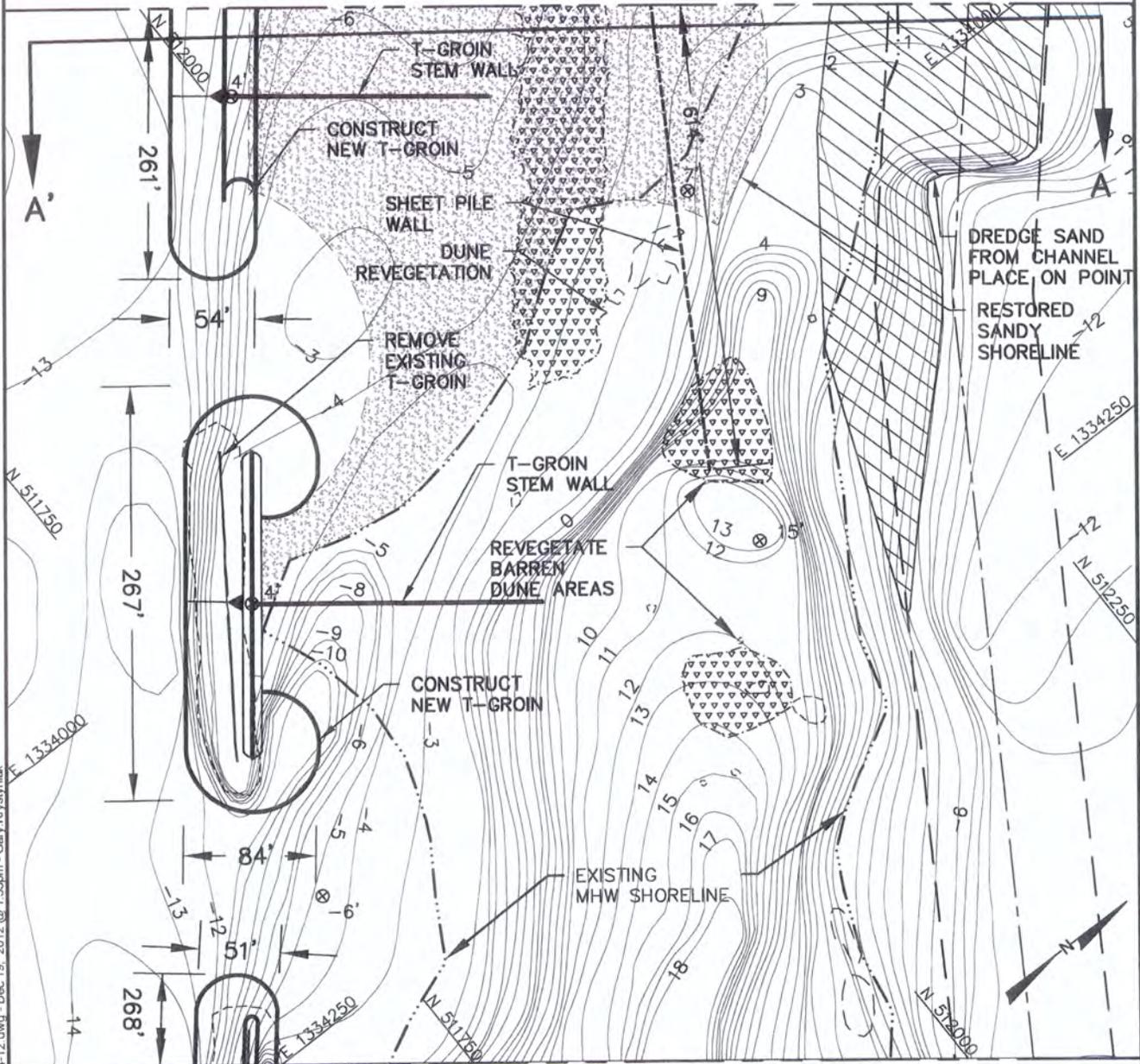
DOUGLAS W. MANN P.E. NO. 44046

City of Destin
 SAJ-2012-00702 (SP-TSH)
 October 28, 2013
 Permit Drawings: 13 of 15



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MATCH LINE SHEET 2



NORRIEGO POINT STABILIZATION PROJECT
PLAN VIEW

COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
2461 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
www.CoastalPlanning.net
PH: (954) 391-8102
FAX: (954) 391-8115
C.O.A. FL. #4028



DATE: 2/14/12
BY: HV

COMM NO.: 142474
SHEET: 14

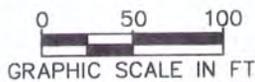
MATCH LINE SHEET 4

NOTES:

- COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
- ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- DATE OF AERIAL PHOTOGRAPH: 2010
- CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.

LEGEND:

- ⊗ 4' PROPOSED ELEVATION FT. NAVD
- [Hatched Box] MAINTENANCE DREDGE FILL
- [Diagonal Lines Box] OLD PASS LAGOON MAINTENANCE DREDGE
- [Triangle Pattern Box] DUNE VEGETATION



NOT FOR CONSTRUCTION
FOR REGULATORY REVIEW ONLY

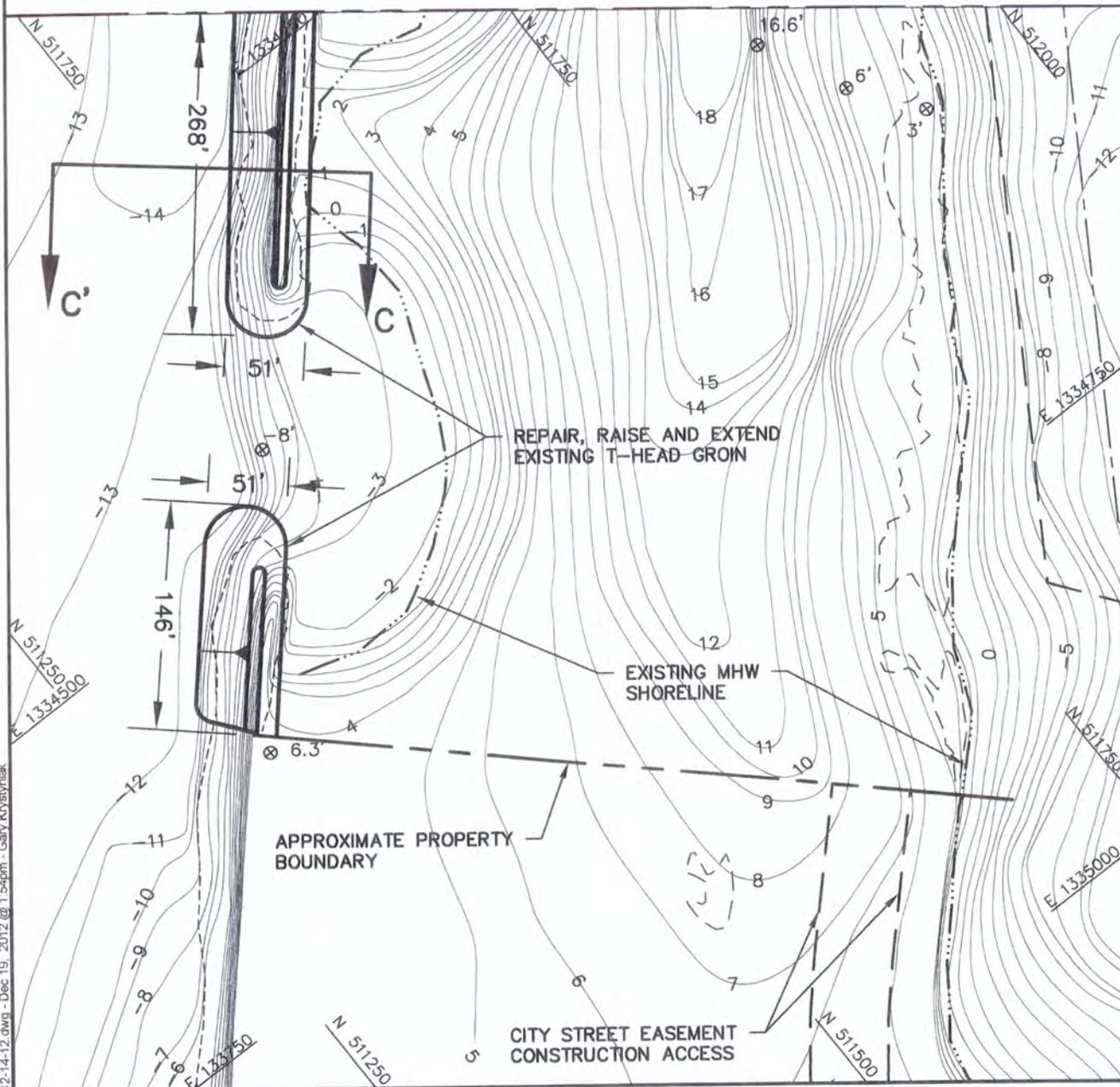
DOUGLAS W. MANN, P.E. NO. 44046

City of Destin
SAJ-2012-00702 (SP-TSH)
October 28, 2013
Permit Drawings: 14 of 15



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MATCH LINE SHEET 14



NORRIEGO POINT STABILIZATION PROJECT
PLAN VIEW WITHOUT AERIAL IMAGERY

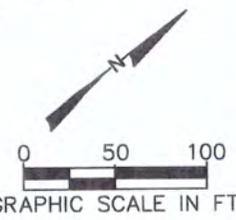
COASTAL PLANNING & ENGINEERING, INC.
A SHAW GROUP COMPANY
 2461 N.W. BOCA RATON BOULEVARD
 BOCA RATON, FLORIDA 33431
 PH: (954) 394-8102
 FAX: (954) 394-8116
 C.O.A.F. #4029
www.CoastalPlanning.net



DATE:	2/14/12
BY:	HV
COMM NO.:	142474
SHEET:	15

LEGEND:

⊗ 4' PROPOSED ELEVATION FT. NAVD



NOTES:

- COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
- ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- CONTOURS REFLECT 2012 BATHYMETRIC SURVEY BY CPE.

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FOR REGULATORY REVIEW ONLY

REVISIONS		
DATE	BY	DESCRIPTION
4/3/12	DM	USACE RAI #1
12/16/12	DM	CITY REALIGNMENT

DOUGLAS W. MANN P.E. NO. 44046

City of Destin
 SAJ-2012-00702 (SP-TSH)
 October 28, 2013
 Permit Drawings: 15 of 15



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**FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

ATTACHMENT 2

SAJ-2012-00702 (SP-TSH)
Water Quality Certification
13 pages

HERSCHEL F. VINYARD JR.
SECRETARY

**CONSOLIDATED JOINT COASTAL PERMIT AND
SOVEREIGN SUBMERGED LANDS AUTHORIZATION**

PERMITTEE:

City of Destin
ATTN: Steve Schmidt
4200 Indian Bayou Trail
Destin, Florida 32541

AGENT:

Coastal Planning and Engineering, Inc.
ATTN: Douglas Mann
2481 Northwest Boca Raton Boulevard
Boca Raton, Florida 32541

PERMIT INFORMATION:

Permit Number: 0175572-003-JC
Project Name: Norriego Point Stabilization
County: Okaloosa
Issuance Date: June 24, 2013
Expiration Date: June 24, 2018

REGULATORY AUTHORIZATION:

This permit is issued under the authority of Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code (F.A.C.). Pursuant to Operating Agreements executed between the Department of Environmental Protection (Department) and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity.

PROJECT DESCRIPTION:

The project consists of the following: construction of 614 linear feet of seawall facing the harbor (on the northeastern side of the point), 326 linear feet of seawall and toe protection on the northwestern terminal end of the point, 250 linear feet of sheet pile wall across the width of the point, and 2 additional T-head groins, each with heads measuring 220 linear feet at the water line; remove, replace and extend 1 existing T-head groin; repair and extend 1 existing T-head groin and 1 existing spur groin; dredge 5,000 cubic yards of material from the harbor channel; using the material dredged from the harbor channel as fill to extend the point to its previous length, and to construct a dune feature; and vegetate the dune. The seawalls and T-heads will either have riprap in front of the steel sheet piles or will be entirely constructed of rock.

PROJECT LOCATION:

The activity is located at the western terminus of Gulf Shore Drive, in the City of Destin, Section 00, Township 02 South, Range 23 West, Class II Waters (Shellfish Harvesting Prohibited), Okaloosa County, East Pass Inlet and Old Pass Lagoon (also known as Destin Harbor).

PROPRIETARY AUTHORIZATION:

This activity also requires a proprietary authorization, as the activity is located on sovereign submerged lands held in trust by the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, F.S. The activity is not exempt from the need to obtain a proprietary authorization. The Board of Trustees delegated, to the Department, the responsibility to review and take final action on this request for proprietary authorization in accordance with Section 18-21.0051, F.A.C., and the Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C. This proprietary authorization has been reviewed in accordance with Chapter 253, F.S., Chapter 18-21, F.A.C., Section 62-343.075, F.A.C., and the policies of the Board of Trustees.

As staff to the Board of Trustees, the Department has reviewed the project described above, and has determined that the dredging activities qualify for a Letter of Consent to use sovereign, submerged lands, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein. Therefore, consent is hereby granted, pursuant to Chapter 253.77, F.S., to perform the activity on the specified sovereign submerged lands.

The Department has also determined that the shoreline stabilization activity and back-filling requires a public easement for the use of those lands, pursuant to Chapter 253.77, F.S. The Department intends to issue the public easement to the City of Destin, Florida, subject to the conditions outlined in the previously issued *Consolidated Intent to Issue* and in the Recommended Proprietary Action (entitled *Delegation of Authority*).

The final documents required to execute the easement have been sent to the Division of State Lands. The Department intends to issue the easement upon satisfactory execution of those documents. **You may not begin construction of this activity on state-owned, sovereign submerged lands until the easement has been executed to the satisfaction of the Department.**

COASTAL ZONE MANAGEMENT:

This permit constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

WATER QUALITY CERTIFICATION:

This permit constitutes certification of compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341.

OTHER PERMITS:

Authorization from the Department does not relieve you from the responsibility of obtaining other permits (Federal, State, or local) that may be required for the project. When the Department received your permit application, a copy was sent to the U.S. Army Corps of Engineers (Corps) for review. The Corps will issue their authorization directly to you, or contact

you if additional information is needed. If you have not heard from the Corps within 30 days from the date that your application was received by the Department, contact the nearest Corps regulatory office for status and further information. Failure to obtain Corps authorization prior to construction could subject you to federal enforcement action by that agency.

AGENCY ACTION:

The above named Permittee is hereby authorized to construct the work outlined in the activity description and activity location of this permit and shown on the approved permit drawings, plans and other documents attached hereto. This agency action is based on the information submitted to the Department as part of the permit application, and adherence with the final details of that proposal shall be a requirement of the permit. **This permit and authorization to use sovereign submerged lands are subject to the General Conditions and Specific Conditions, which are a binding part of this permit and authorization.** Both the Permittee and their Contractor are responsible for reading and understanding this permit (including the permit conditions and the approved permit drawings) prior to commencing the authorized activities, and for ensuring that the work is conducted in conformance with all the terms, conditions and drawings.

GENERAL CONDITIONS:

1. All activities authorized by this permit shall be implemented as set forth in the plans and specifications approved as a part of this permit, and all conditions and requirements of this permit. The Permittee shall notify the Department in writing of any anticipated deviation from the permit prior to implementation so that the Department can determine whether a modification of the permit is required pursuant to Section 62B-49.008, F.A.C.
2. If, for any reason, the Permittee does not comply with any condition or limitation specified in this permit, the Permittee shall immediately provide the Beaches, Inlets and Ports Program (BIPP) and the appropriate District office of the Department with a written report containing the following information: a description of and cause of noncompliance; and the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.
3. This permit does not eliminate the necessity to obtain any other applicable licenses or permits that may be required by federal, state, local, special district laws and regulations. This permit is not a waiver or approval of any other Department permit or authorization that may be required for other aspects of the total project that are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of sovereignty land of Florida seaward of the mean high-water line, or, if established, the erosion control line, unless herein provided and the necessary title, lease, easement, or other form of consent authorizing the proposed use has been obtained from the State. The Permittee is

**Joint Coastal Permit
Norriego Point Stabilization
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responsible for obtaining any necessary authorizations from the Board of Trustees of the Internal Improvement Trust Fund prior to commencing activity on sovereign lands or other state-owned lands.

5. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered specifically approved unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.
6. This permit does not convey to the Permittee or create in the Permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the Permittee. The issuance of this permit does not convey any vested rights or any exclusive privileges.
7. This permit or a copy thereof, complete with all conditions, attachments, plans and specifications, modifications, and time extensions shall be kept at the work site of the permitted activity. The Permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
8. The Permittee, by accepting this permit, specifically agrees to allow authorized Department personnel with proper identification and at reasonable times, access to the premises where the permitted activity is located or conducted for the purpose of ascertaining compliance with the terms of the permit and with the rules of the Department and to have access to and copy any records that must be kept under conditions of the permit; to inspect the facility, equipment, practices, or operations regulated or required under this permit; and to sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules. Reasonable time may depend on the nature of the concern being investigated.
9. At least forty-eight (48) hours prior to commencement of activity authorized by this permit, the Permittee shall submit to the BIPP (JCP Compliance Officer) and the appropriate District office of the Department a written notice of commencement of construction indicating the actual start date and the expected completion date and an affirmative statement that the Permittee and the contractor, if one is to be used, have read the general and specific conditions of the permit and understand them.
10. If historic or archaeological artifacts, such as, but not limited to, Indian canoes, arrow heads, pottery or physical remains, are discovered at any time on the project site, the Permittee shall immediately stop all activities in the immediate area that disturb the soil in the immediate locale and notify the State Historic Preservation Officer and the BIPP (JCP Compliance Officer). In the event that unmarked human remains are encountered during permitted activities, all work shall stop in the immediate area and the proper authorities notified in accordance with Section 872.02, F.S.

11. Within 30 days after completion of construction or completion of a subsequent maintenance event authorized by this permit, the Permittee shall submit to the BIPP (JCP Compliance Officer) and the appropriate District office of the Department a written statement of completion and certification by a registered professional engineer. This certification shall state that all locations and elevations specified by the permit have been verified; the activities authorized by the permit have been performed in compliance with the plans and specifications approved as a part of the permit, and all conditions of the permit; or shall describe any deviations from the plans and specifications, and all conditions of the permit. When the completed activity differs substantially from the permitted plans, any substantial deviations shall be noted and explained on one electronic copy of as-built drawings submitted to the BIPP (JCP Compliance Officer).

SPECIFIC CONDITIONS:

1. The terms, conditions and provisions of the required easement shall be met. The Notice to Proceed shall not be issued and construction of this activity shall not commence on sovereign submerged lands, title to which is held by the Board of Trustees, until all easement documents have been executed to the satisfaction of the Department.
2. When discharging slurried sand onto the beach from a pipeline, the Permittee shall employ best management practices (BMPs) to reduce turbidity. At a minimum, these BMPs shall include the following:
 - a. The erosion control structures shall be constructed prior to fill placement;
 - b. Use of shore-parallel sand dikes on the beach berm, seaward of the pipeline discharge point, to maximize settlement of suspended sediment on the beach before return water from the dredged discharge reenters the Atlantic Ocean; and
 - c. A pipeline discharge point that is located at least 50 feet from open water or at the landward edge of the beach berm (if the berm width is less than 50 feet).
3. All reports or notices relating to this permit shall be sent to the JCP Compliance Officer (e-mail address: JCPCCompliance@dep.state.fl.us) unless otherwise directed by one of the Specific Conditions.
4. The Permittee shall not store or stockpile tools, equipment, materials, etc., within littoral zones or elsewhere within surface waters of the state without prior written approval from the Department. Storage, stockpiling or access of equipment on, in, over or through seagrass (or other aquatic vegetation) beds or wetlands is prohibited unless within a work area or ingress/egress corridor specifically approved by this permit. Anchoring or spudding of vessels and barges within beds of aquatic vegetation or over hardbottom areas is also prohibited.

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5. The Permittee shall not conduct project operations or store project-related equipment in, on or over dunes, or otherwise impact dune vegetation, outside the approved staging, beach access and dune restoration areas designated in the permit drawings.
6. No work shall be conducted under this permit until the Permittee has received a written notice to proceed from the Department. At least 30 days prior to the requested date of issuance of the notice to proceed, the Permittee shall submit a written request for a Notice to Proceed and the following items for review and approval by the Department:
 - a. An electronic copy of the final plans and specifications for this project, which must be consistent with the activity description of this permit and the approved permit drawings. The plans and specifications shall also be certified by a professional engineer (P.E.), who is registered in the State of Florida. If electronic certification is not available, a hard copy of the plans and specifications would also be required. The Permittee shall point out any deviations from the activity description or the approved permit drawings, and any significant changes would require a permit modification. The plans and specifications shall be accompanied by correspondence indicating the project name, the permit number, the type of construction activity, the specific type of equipment to be used, the anticipated volume of material to be moved (if applicable) and the anticipated schedule. Further, the Permittee shall specify any anticipated sites that will be used (such as a disposal or re-use location) and appropriate contact information for those facilities. The final plans and specifications submitted under this condition must comply with all conditions set forth in this permit.
 - b. Documentation that the Public Easement has been executed and recorded to the satisfaction of the Department.
7. The permittee shall provide (to the JCP Compliance Officer) quarterly periodic progress reports certified by a P.E., and supported with photos. The reports shall be submitted on a three-month basis beginning at the start of construction and continuing until all work has been completed. The P.E. shall certify that all construction as of the date of each report has been performed in compliance with the plans and the project description approved as a part of the permit, and with all conditions of the permit, or shall specify any deviation from the plans, project description or conditions of the permit. The report shall also state the percent of completion of the project and each major individual component.
8. **Pre-Construction Conference.** The Permittee shall conduct a pre-construction conference to review the specific conditions and monitoring requirements of this permit with Permittee's contractors, the engineer of record and the JCP Compliance Officer (or designated alternate). In order to ensure that appropriate representatives are available, at least twenty-one (21) days prior to the intended commencement date for the permitted construction, the Permittee is advised to contact the Department, and the other agency representatives listed below:

JCP Compliance Officer
phone: (850) 414-7716
e-mail: JCPCompliance@dep.state.fl.us

DEP Northwest District Office
Submerged Lands & Environmental Resources
160 Governmental Center
Pensacola, Florida 32501-5794
Phone: 850-595-8300
FAX: 850-595-8311

Imperiled Species Management Section
Florida Fish & Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, Florida 32399-1600
phone: (850) 922-4330
fax: (850) 921-4369
email: marineturtle@myfwc.com

The Permittee is also advised to schedule the pre-construction conference at least a week prior to the intended commencement date. At least seven (7) days in advance of the pre-construction conference, the Permittee shall provide written notification, advising the participants (listed above) of the **agreed-upon** date, time and location of the meeting, and also provide a meeting agenda and a teleconference number.

9. Signage is recommended on, or adjacent to, the authorized erosion control structures to warn the public of possible hazardous conditions associated with accessing the structures.
10. Sediment data of proposed maintenance dredging areas within the segment of Old Pass Lagoon Channel, between station 24+00 and 41+25, shall be submitted in order to ensure that the material is suitable for placement on Norriego Point. Prior to sampling, the Permittee shall contact the Department regarding the appropriate sediment sampling method of either grab samples or cores to be used, depending upon the depth of shoaling. The material shall be tested using standard sieve analysis and color evaluation.

Shorebird Protective Measures for Beach Placement of Material

11. Nesting shorebird surveys should be conducted by trained, dedicated individuals (Bird Monitor) with proven shorebird identification skills and avian survey experience. A list of candidate Bird Monitors with their contact information, summary of qualifications including bird identification skills, and avian survey experience shall be provided to the Florida Fish and Wildlife Conservation Commission (FWC). This information will be electronically submitted to the FWC regional biologist, Dr. John Himes (John.Himes@MyFWC.com), prior to any construction or hiring for shorebird surveys

for revision and consultation. Bird Monitors shall use the following survey protocols:

- a. Bird Monitors shall review and become familiar with the general information, employ the data collection protocol, and implement data entry procedures outlined on the FWC's Florida Shorebird Database (FSD) website (www.FLShorebirdDatabase.org). An outline of data to be collected, including downloadable field data sheets, is available on the website.
- b. The breeding season of state-listed shorebird species that may occur in the vicinity of this project site is collectively from February 15 – September 1. Breeding season surveys shall begin on the first day of the breeding season or 10 days prior to project commencement (including surveying activities and other pre-construction presence on the beach), whichever is later. Surveys shall be conducted through August 31st or until all breeding activity has concluded, whichever is later.
- c. Breeding season surveys shall be conducted in all potential beach-nesting bird habitats within the project boundaries that may be impacted by construction or pre-construction activities. Portions of the project, in which there is no potential for project-related activity during the nesting season, may be excluded. One or more shorebird survey routes shall be established in the FSD website to cover these areas.
- d. During the pre-construction and construction phases of the project, surveys for detecting breeding activity and the presence of flightless chicks shall be completed on a daily basis prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt breeding behavior or cause harm to the birds or their eggs or young.
- e. Surveys shall be conducted by walking the length of the project area and visually surveying for the presence of shorebirds exhibiting breeding behavior, shorebird chicks, or shorebird juveniles as outlined in the FSD *Breeding Bird Protocol for Shorebirds and Seabirds*. Use of binoculars is required. If an all-terrain vehicle or other vehicle is needed to cover the project area, operators shall adhere to the FWC's Best Management Practices for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-serve/wildlife/beach-driving/>). Specifically, the vehicle must be operated at a speed <6 mph and run at or below the high-tide line. The Bird Monitor will stop at no greater than 200-meter intervals to visually inspect for breeding activity.
- f. Once breeding is confirmed by the presence of a scrape, eggs, or young, the Bird Monitor will electronically notify the FWC Regional Species Conservation Biologist, Dr. John Himes (John.Himes@MyFWC.com), within 24 hours. All breeding activity shall be reported to the FSD website within one week of data collection.

Standard Manatee Conditions for In-Water Work

12. The Permittee shall comply with the following conditions intended to protect manatees from direct project effects:
 - a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The Permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
 - b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels shall follow routes of deep water whenever possible.
 - c. If siltation or turbidity barriers are used, they shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
 - d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities shall not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
 - e. Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com
 - f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the Permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters - Watch for Manatees* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

13. Water Quality - Turbidity shall be monitored as follows:

Units: Nephelometric Turbidity Units (NTUs).

Frequency: Twice daily, at least four hours apart, while the heaviest turbidity plume is crossing the edge of the mixing zone.

Location: **Dredge site:**

Compliance: 150 meters downcurrent of the dredge (cutterhead or hopper overflow) and within the densest portion of any visible turbid plume at surface, mid-depth, and 2 meters above bottom.

Background: 500 meters upcurrent of the dredge, clearly outside of any artificially generated turbid plume. The depths of the samples shall be surface, mid-depth, and 2 meters above the bottom.

Beach/Discharge Site using hydraulic discharge:

Compliance: 150 meters downcurrent of the discharge point, within the densest portion of any visible turbid plume generated by this project. The depths of the samples shall be at surface and mid-depth.

Background: Approximately 300 meters upcurrent of any portion of the fill placement template that is being filled or has already been filled during the current event, outside of any project-related or inlet-related plume, and the same distance offshore as the associated compliance sample.

Fill Site using an upland stockpiled sand source:

Compliance: 150 meters downcurrent of the point where sand was most recently placed in the water and within the densest portion of any visible turbid plume. The depths of the samples shall be at surface and mid-depth.

Background: approximately 300 meters upcurrent of any portion of the beach placement template that is being filled or has already been filled during the current event, outside of any project-related or inlet-related plume, and the same distance offshore as the associated compliance sample.

If monitoring shows that turbidity at any of the compliance stations exceeds background by more than 29 NTU, then construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable

levels. Any such occurrence shall be immediately reported to the JCP Compliance Officer in Tallahassee and the Northwest District Office in Pensacola, and include in the subject line, "TURBIDITY EXCEEDANCE".

Any project-associated discharge other than dredging, disposing, or nourishing the beach (e.g., scow leakage or runoff from temporary containment area) shall be monitored as close to the source as possible every hour until background turbidity levels return or until otherwise directed by the Department. If monitoring shows that turbidity at any of these sites exceeds background by more than 29 NTU, then construction activities shall cease immediately until background turbidity levels return or until otherwise directed by the Department. The Permittee shall notify the Department, by separate email to the JCP Compliance Officer, of such an event within 24 hours of the time the Permittee first becomes aware of the discharge. The subject line of the email shall state "PROJECT-ASSOCIATED DISCHARGE-OTHER".

14. When reporting a turbidity exceedance, the following information shall also be included:
 - a. the Project Name;
 - b. the Permit Number (unique to the NTP);
 - c. location and level (NTUs above background) of the turbidity exceedance;
 - d. the time and date that the exceedance occurred; and
 - e. the time and date that construction ceased.

Prior to re-commencing the construction, a report shall be emailed to the Department with the same information that was included in the "Exceedance Report", plus the following information:

- a. turbidity monitoring data collected during the shutdown documenting the decline in turbidity levels and achievement of acceptable levels;
 - b. corrective measures that were taken; and
 - c. cause of the exceedance.
15. Turbidity Monitoring Reports. All turbidity monitoring data shall be submitted to the JCP Compliance Officer within one week of analysis, along with documents containing the following information:
 - a. time of day samples were taken;

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- b. dates of sampling and analysis;
- c. depth of water body;
- d. depth of each sample;
- e. antecedent weather conditions, including wind direction and velocity;
- f. tidal stage and direction of flow;
- g. water temperature;
- h. a map (overlaid on an aerial photograph) indicating the sampling locations, dredging and discharge locations (all documented with GPS), and direction of flow;
- i. a statement describing the methods used in collection, handling, storage and analysis of the samples;
- j. a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, calibration of the meter and accuracy of the data;
- k. When samples cannot be collected, include an explanation in the report. If unable to collect samples due to severe weather conditions, include a copy of a current report from a reliable, independent source, such as an online weather service.

Failure to submit reports in a timely manner constitutes grounds for revocation of the permit. When submitting this information to the Department, on the cover page to the submittal and at the top of each page, please state: "This information is provided in partial fulfillment of the monitoring requirements in Permit No. 0175572-003-JC, for the Norriego Point Stabilization Project."

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Martin K. Seeling, Administrator
Beaches, Inlets and Ports Program

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Lauren Wild

6/24/13

Deputy Clerk

Date

Prepared by: Tom Jacobs.

Attachments: Approved Permit Drawings (30 pages)

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Submit this form and one set of as-built engineering drawings to the U.S. Army Corps of Engineers, Enforcement Section, 41 North Jefferson Street, Suite 301, Pensacola, Florida, 32563. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-237-3131

ATTACHMENT 3

SAJ-2012-00702 (SP-TSH)
As-Built Certification Form
2 pages

1. Department of the Army Permit Number: SAJ-2012-00702(SP-TSH)

2. Permittee Information:

Name: _____

Address: _____

3. Project Site Identification (physical location/address):

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled, and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer

Name (*Please type*)

(FL, PR, or VI) Reg. Number

Company Name

City

State

ZIP

(Affix Seal)

Date

Telephone Number



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006

O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc



ATTACHMENT 5

SAJ-2012-00702 (SP-TSH)
NMFS Biological Opinion
27 pages



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
<http://sero.nmfs.noaa.gov>

APR 19 2013

F/SER31:AB

Mr. Clif Payne
Chief, Pensacola Permits Section
Jacksonville District Corps of Engineers
Pensacola Field Office
41 North Jefferson Street, Suite 301
Pensacola, Florida 32502-5794

Ref.: SAJ-2012-702 (IP-TSH), Norriego Point Peninsula Nourishment and Stabilization

Dear Mr. Payne:

Enclosed is the National Marine Fisheries Service's (NMFS) biological opinion issued in accordance with Section 7 of the Endangered Species Act (ESA) of 1973. The U.S. Army Corps of Engineers (USACE), Jacksonville District proposes to issue a permit for the nourishment and stabilization of the Norriego Point peninsula located in Destin Harbor, Florida. This proposed work intends to restore the peninsula that has been eroding into the adjacent federal navigation channel. A portion of this effort will take place within Gulf sturgeon critical habitat.

The biological opinion (opinion) analyzes the project's effects on five species of sea turtles, Gulf sturgeon, and Gulf sturgeon critical habitat. This opinion is based on project-specific information provided by the USACE, the applicant's consultant, and our review of published literature. It is NMFS' opinion that the action, as proposed, may affect, but is not likely to adversely affect sea turtles and Gulf sturgeon. It is also our opinion that the project is likely to adversely affect Gulf sturgeon critical habitat, but is not likely to destroy or adversely modify it.

We look forward to further cooperation with you on other USACE projects to ensure the conservation and recovery of our threatened and endangered marine species. If you have any questions regarding this consultation, please contact Adam Brame, consultation biologist, at (727) 209-5958, or by e-mail at Adam.Brame@noaa.gov.

Sincerely,


for Roy E. Crabtree, Ph.D.
Regional Administrator

- Enc.: 1. Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006)
2. PCTS Access and Additional Considerations for ESA Section 7 Consultations
(Revised July 15, 2009)

File: 1514-22.F.4
Ref.: SER-2012-2282



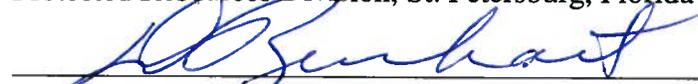
**Endangered Species Act - Section 7 Consultation
Biological Opinion**

Action Agency: U.S. Army Corps of Engineers (USACE), Jacksonville District

Activity: Norriego Point peninsula nourishment and stabilization
(Consultation Number F/SER/2012/02282)

Consulting Agency: National Oceanic and Atmospheric Administration, National
Marine Fisheries Service (NMFS), Southeast Regional Office,
Protected Resources Division, St. Petersburg, Florida

Approved by:



for Roy E. Crabtree, Ph.D., Regional Administrator
NMFS, Southeast Regional Office
St. Petersburg, Florida

Date Issued: _____

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Background

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*), requires that each federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species; Section 7(a)(2) requires federal agencies to consult with the appropriate Secretary on any such action. NMFS and the U.S. Fish and Wildlife Service (USFWS) share responsibilities for administering the ESA.

Consultation is required when a federal action agency determines that a proposed action “may affect” listed species or designated critical habitat. Consultation is concluded after NMFS determines the proposed action is not likely to adversely affect listed species or their critical habitat, or issues a biological opinion (opinion) that identifies whether a proposed action is likely to jeopardize the continued existence of a listed species, or destroy or adversely modify critical habitat. The opinion states the amount or extent of incidental take of the listed species that may occur and recommends conservation measures to further conserve the species.

This document represents NMFS’ opinion based on our review of impacts associated with the Norriego Point peninsula nourishment and stabilization located in Destin, Florida. This opinion analyzes project effects on sea turtles, Gulf sturgeon, and Gulf sturgeon critical habitat in accordance with Section 7 of the ESA. This opinion is based on project information provided by the Jacksonville District USACE, the applicant’s biological consultant, and other sources of information including published literature cited herein.

BIOLOGICAL OPINION

1 CONSULTATION HISTORY

NMFS received a request for ESA consultation from the Jacksonville District USACE on May 25, 2012. The USACE determined that the project proposed by the City of Destin may affect, but is not likely to adversely affect, sea turtles and Gulf sturgeon. The USACE also determined that the project may affect Gulf sturgeon critical habitat and requested the initiation of formal consultation. After reviewing all information provided, NMFS contacted the USACE by e-mail requesting additional information on July 5, 2012. The requested information was received by e-mail July 16, 2012, and formal consultation was then initiated. However, on December 31, 2012, NMFS received an e-mail correspondence from the USACE indicating the applicant made changes to the proposed action. The USACE sent the new project information to NMFS via e-mail January 15, 2013 at which time consultation was reinitiated.

2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

2.1 Proposed Action

The USACE proposes to issue a permit to the City of Destin for the nourishment and stabilization of Norriego Point peninsula. This geographic feature has been eroding into the adjacent federal navigation channel over the past several years, especially following strong storms. The point of the peninsula is currently used as one of four disposal sites for sediments dredged from the adjacent federal channel. The proposed work intends to nourish the point back to the size and dimensions that existed in 2004, while shifting the tip of the peninsula approximately 100 ft to the west and adding groins to prevent future erosion. Work will consist of (1) the construction of 550 linear ft of harborside seawall (northeast side of the point); (2) dredging of approximately 7,500 cubic yards of sediments (beach compatible sand) from a 1.56-ac area, followed by placement of this material on the point; (3) construction of 327 linear ft of seawall around the tip of the point along with rock toe protection; (4) repair, raising, and extension of two existing groins; (5) removal and reconstruction of a T-head groin measuring approximately 267-ft-long by 84-ft-wide (length may be slightly shortened if the rock only option is selected); (6) construction of a new 261-ft-long by 54-ft-wide T-head groin (rock and sheet pile option) or a 252-ft-long by 68-ft-wide T-head groin (rock only option); (7) construction of a 245-ft-long by 62-ft-wide rubble mound groin along the west side of the point; (8) construction of a 215-linear-ft cross shore seawall (extending between the harborside seawall and the rubble mound groin); (9) placement of beach compatible sand from the dredging of the adjacent navigation channel as it becomes available during routine dredging operations; and (10) construction and planting of dune features. The new T-groins will contain an inner wall constructed of sheet pile, though the applicant also includes a rock only option that may increase the rock footprints of the two new T-groins. It is likely that the applicant will use a phased implementation schedule for this project because of funding limitations, but work will commence in the order outlined above (1-10). The City of Destin anticipates that construction will take 3-4 months for completion, though additional sediments may be added to the point as they become available during periodic maintenance dredging of nearby federal navigation channels. The applicant will comply with NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions* dated March 23, 2006 (enclosed).

Dredging associated with this project will take place within the boundary of the federal navigation channel and will not exceed the depth limits set (-12.0 ft North Atlantic Vertical Datum 1988) by the 10-year dredging authorization permit consulted on by NMFS (F/SER/2008/08840) and issued by the USACE in 2009. Dredging will be conducted using a hydraulic cutterhead dredge and material will be dispersed using spreader pipes. Dikes will be used during sand placement to control turbidity. The sand will then be graded with bulldozers to reach the desired topography. The amount of dredging proposed as part of this project will not generate enough sand to completely nourish the peninsula, but the City of Destin anticipates that the periodic maintenance dredging of the nearby channels will result in additional fill material during future dredging events.

Groin and seawall construction will take place using barge-based excavators and pile driving equipment. Rock material for groin construction and improvement will be barged to the site and rocks will be individually placed. Seawalls will be constructed by installing steel sheet piles and pouring a concrete cap. The sheet piles will be installed using a pneumatic vibrating driver. The concrete cap will be poured in place and will likely occur over several cycles in which approximately 100 ft of concrete cap will be created during each cycle.

2.2 Action Area

The proposed project is located along the Norriego Point peninsula which lies between East Pass and Destin Harbor, Osceola County, Florida, at approximately 30.3917°N, 86.5112°W (North American Datum 1983). East Pass connects the Gulf of Mexico with Choctawhatchee Bay and the Choctawhatchee River (Fig. 1). The action area for this project will include Choctawhatchee Bay and East Pass, through which materials and barges may pass. This includes all areas in the immediate project area surrounding Norriego Point peninsula where the actual work will occur (i.e., the peninsula, the area to be dredged, and surrounding waters).

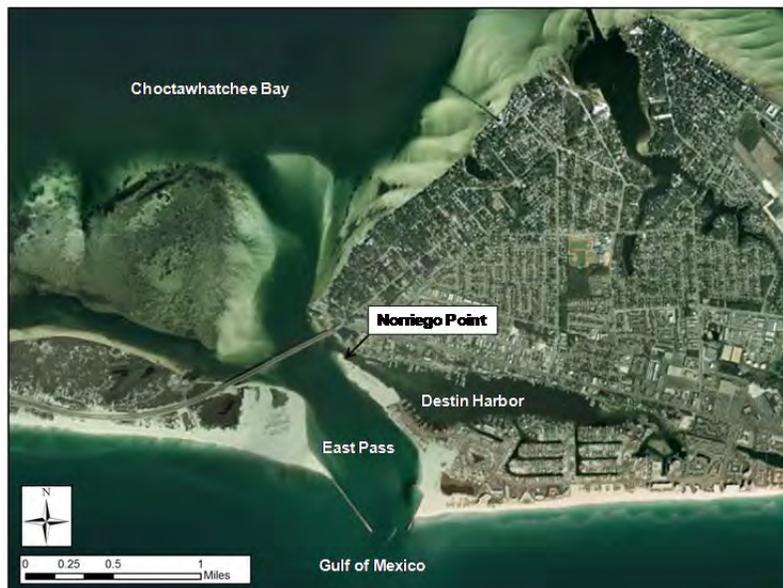


Figure 1. Project action area.

3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

3.1 Listed Species that May Occur in the Action Area

The following endangered (E) and threatened (T) sea turtle, and fish species, and designated critical habitat under the jurisdiction of NMFS may occur in or near the action area:

Common Name	Scientific Name	ESA Listed Status
<i>Sea Turtle</i>		
Loggerhead sea turtle	<i>Caretta caretta</i> ¹	T
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E
Green sea turtle	<i>Chelonia mydas</i> ²	E/T
<i>Fish</i>		
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	T
<i>Designated Critical Habitat</i>		
Gulf sturgeon – Unit 12 (Choctawhatchee Bay)		

3.2 Listed Species Not Likely to be Adversely Affected

Five species of sea turtles (loggerhead, green, hawksbill, Kemp's ridley, and leatherback), and Gulf sturgeon protected by the ESA can be found in or near the action area and may be affected by the project.

Sea turtles and Gulf sturgeon may be affected by construction-related activities such as barge traffic, the deposition of materials (beach nourishment and groin construction), and dredging. However, due to the operation of vessels at slow speeds, species' mobility, and the implementation of NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions* (enclosed), the risk of injury will be discountable. Hydraulic (cutterhead) dredging is not likely to adversely affect sea turtle and sturgeon species, as interactions are highly unlikely. To date, NMFS has received limited reports of sea turtle or sturgeon interactions with hydraulic dredges (one loggerhead turtle killed in Florida and several juvenile green sea turtles killed in Texas, though the green turtles were concomitantly affected by a severe cold event). Therefore, due to the rarity of these incidents, NMFS believes that the likelihood of these species being adversely impacted by dredging operations is discountable.

Sea turtles may be affected by being temporarily unable to use the project site due to potential avoidance of construction activities and their related noise. Noise associated with the installation of steel sheet piles by a pneumatic vibratory hammer will not exceed injurious thresholds for sea turtles but may cause behavioral effects to a distance of approximately 10 m (see Appendix A:

¹ Northwest Atlantic Ocean (NWA) distinct population segment (DPS).

² Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.

Noise Thresholds and Calculations). However, NMFS does not believe this will cause any significant disruption of normal behavior and foraging of sea turtles because work will only occur in one small geographic area. Therefore, sea turtles will still be able to transit through East Pass and use areas of the pass and Choctawhatchee Bay unaffected by project construction. Kemp's ridley and loggerhead sea turtles are the two species most likely to occur in the project area and are generalist carnivores, typically preying on benthic mollusks and crustaceans in the nearshore environment. These two species of sea turtles can be found foraging in shallow sand (similar to the existing conditions) and mud habitats, as well as high-relief rock or reef habitats (which do not occur in the project area). NMFS believes any habitat and food availability effects of the project on turtles will be insignificant since the area impacted is relatively small in comparison to available foraging habitat nearby. Therefore, NMFS has determined that any avoidance effects by sea turtles from construction associated with the restoration of this area are insignificant.

Gulf sturgeon may also be affected by being temporarily unable to use the project site due to potential avoidance of construction activities and their related noise. Noise associated with the installation of steel sheet piles by a pneumatic vibratory hammer will not exceed injurious thresholds for fish but may cause behavioral effects at a distance up to 100 m (Appendix A). Gulf sturgeon are known to use Choctawhatchee Bay, East Pass, and nearshore Gulf waters as foraging habitat during the winter months and therefore may be affected by the project if construction occurs between October and March. However, normal behavior patterns of Gulf sturgeon are not expected to be significantly disrupted by the project because (1) although the project will remove potential forage grounds through beach nourishment and noise exclusion, adequate forage grounds unaffected by the project will remain available and (2) migration corridors will remain open. Therefore, NMFS has determined that any avoidance effects by Gulf sturgeon from construction associated with the restoration of this area are insignificant.

In summary, NMFS concludes green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, and Gulf sturgeon are not likely to be adversely affected by the proposed action as any effects will be discountable or insignificant. Therefore, these species will not be discussed further in this opinion and no incidental take statement will be issued.

3.3 Critical Habitat Likely to be Adversely Affected

Gulf sturgeon critical habitat was jointly designated by NMFS and USFWS on April 18, 2003 (50 CFR 226.214). Critical habitat is defined in Section 3(5)(A) of the ESA as (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. The term "conservation" is defined in Section 3(3) of the ESA as the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which listing under the ESA is no longer necessary.

Gulf sturgeon critical habitat includes areas within the major river systems that support the seven currently reproducing sub-populations (USFWS et al. 1995), and associated estuarine and marine

habitats. Gulf sturgeon use the rivers for spawning, larval and juvenile feeding, adult resting and staging, and to move between the areas that support these components. Gulf sturgeon use the lower riverine, estuarine, and marine environment during winter months primarily for feeding and, more rarely, for inter-river migrations. Estuaries and bays adjacent to the riverine units provide unobstructed passage of Gulf sturgeon from feeding areas to spawning grounds.

Fourteen areas (units) are designated as Gulf sturgeon critical habitat. The project is located in Unit 12, which encompasses Choctawhatchee Bay and connects Unit 11 (the nearshore waters of the Gulf of Mexico in Florida) with Unit 5 (Choctawhatchee and Pea Rivers). Unit 12 does not include the waters of Destin Harbor where the dredging will occur. These 14 critical habitat units encompass a total of 2,783 river kilometers (rkm) and 6,042 km² of estuarine and marine habitats, and include portions of the following Gulf of Mexico rivers, tributaries, estuarine, and marine areas:

- Unit 1 Pearl and Bogue Chitto Rivers in Louisiana and Mississippi;
- Unit 2 Pascagoula, Leaf, Bowie, Big Black Creek, and Chickasawhay Rivers in Mississippi;
- Unit 3 Escambia, Conecuh, and Sepulga Rivers in Alabama and Florida;
- Unit 4 Yellow, Blackwater, and Shoal Rivers in Alabama and Florida;
- Unit 5 Choctawhatchee and Pea Rivers in Florida and Alabama;
- Unit 6 Apalachicola and Brothers Rivers in Florida;
- Unit 7 Suwannee and Withlacoochee Rivers in Florida;
- Unit 8 Lake Pontchartrain (east of causeway), Lake Catherine, Little Lake, the Rigolets, Lake Borgne, Pascagoula Bay, and Mississippi Sound systems in Louisiana and Mississippi, and sections of the state waters within the Gulf of Mexico;
- Unit 9 Pensacola Bay system in Florida;
- Unit 10 Santa Rosa Sound in Florida;
- Unit 11 Nearshore Gulf of Mexico in Florida;
- Unit 12 Choctawhatchee Bay system in Florida;
- Unit 13 Apalachicola Bay system in Gulf and Franklin Counties, Florida; and
- Unit 14 Suwannee Sound in Florida.

Critical habitat determinations focus on those physical and biological features that are essential to the conservation of the species (50 CFR 424.12). Federal agencies must ensure that their activities are not likely to result in the destruction or adverse modification of critical habitat through adverse effects to the essential features on which designations are based. Therefore, proposed actions that may impact designated critical habitat require an analysis of potential impacts to each essential feature.

Features identified as essential for the conservation of the Gulf sturgeon consist of:

- (1) Abundant food items, such as detritus, aquatic insects, worms, and/or molluscs, within riverine habitats for larval and juvenile life stages; and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, molluscs and/or crustaceans, within estuarine and marine habitats and substrates for sub-adult and adult life stages;

(2) Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;

(3) Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, sub-adult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during fresh water residency and possibly for osmoregulatory functions;

(4) A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of fresh water discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging;

(5) Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages;

(6) Sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and

(7) Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

3.3.1 Threats to Critical Habitat

3.3.1.1 Federal Actions

As stated in the final rule designating Gulf sturgeon critical habitat, the following activities, among others, when authorized, funded, or carried out by a federal agency, may destroy or adversely modify critical habitat:

(1) Actions that would appreciably reduce the abundance of riverine prey for larval and juvenile sturgeon, or of estuarine and marine prey for juvenile and adult Gulf sturgeon, within a designated critical habitat unit, such as dredging, dredged material disposal, channelization, in-stream mining, and land uses that cause excessive turbidity or sedimentation;

(2) Actions that would appreciably reduce the suitability of Gulf sturgeon spawning sites for egg deposition and development within a designated critical habitat unit, such as impoundment, hard-bottom removal for navigation channel deepening, dredged material disposal, in-stream mining, and land uses that cause excessive sedimentation;

(3) Actions that would appreciably reduce the suitability of Gulf sturgeon riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, sub-adult, and/or juveniles, believed necessary for minimizing energy expenditures and possibly for osmoregulatory functions, such as dredged material disposal upstream or directly within such areas, and other land uses that cause excessive sedimentation;

(4) Actions that would alter the flow regime (the magnitude, frequency, duration, seasonality, and rate-of-change of fresh water discharge over time) of a riverine critical habitat unit such that it is appreciably impaired for the purposes of Gulf sturgeon migration, resting, staging, breeding site selection, courtship, egg fertilization, egg deposition, and egg development, such as impoundment, water diversion, and dam operations;

(5) Actions that would alter water quality within a designated critical habitat unit, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, such that it is appreciably impaired for normal Gulf sturgeon behavior, reproduction, growth, or viability, such as dredging, dredged material disposal, channelization, impoundment, in-stream mining, water diversion, dam operations, land uses that cause excessive turbidity, and release of chemicals, biological pollutants, or heated effluents into surface water or connected groundwater via point sources or dispersed non-point sources;

(6) Actions that would alter sediment quality within a designated critical habitat unit such that it is appreciably impaired for normal Gulf sturgeon behavior, reproduction, growth, or viability, such as dredged material disposal, channelization, impoundment, in-stream mining, land uses that cause excessive sedimentation, and release of chemical or biological pollutants that accumulate in sediments; and

(7) Actions that would obstruct migratory pathways within and between adjacent riverine, estuarine, and marine critical habitat units, such as dams, dredging, point-source-pollutant discharges, and other physical or chemical alterations of channels and passes that restrict Gulf sturgeon movement (68 FR 13399).

3.3.1.2 *Climate Change*

Climate change is also expected to affect Gulf sturgeon critical habitat in the future, particularly the water quality and prey availability essential features as discussed below. Long-term observations confirm that climate change is occurring at a rapid rate. Over the 20th century, the average annual U.S. temperature has risen by almost 0.6°C (1°F) and precipitation has increased nationally by 5-10 percent, mostly due to an increase in heavy downpours (NAST 2000). These trends are most apparent over the past few decades. It is likely this change in climate will impact coastal water quality by increasing surface temperatures and altering freshwater inputs.

Climate model projections exhibit a wide range of plausible scenarios for both temperature and precipitation over the next century. Both of the principal climate models used by the National Assessment Synthesis Team (NAST) project warming in the Southeast by the 2090s, but at different rates (NAST 2000): the Canadian model scenario shows the southeast United States experiencing a high degree of warming, which translates into lower soil moisture as higher

temperatures increase evaporation; the Hadley model scenario simulates less warming and a significant increase in precipitation (about 20 percent). Scenarios examined, which assume no major interventions to reduce continued growth of world greenhouse gases (GHG), indicate that atmospheric temperatures in the United States will rise by about 3°-5°C (5°-9°F) on average in the next 100 years, which is more than the projected global increase (NAST 2000). For the next two decades a warming of about 0.2°C per decade is projected for a range of GHG emission scenarios (IPCC 2007). This increase in temperature will very likely be associated with more extreme precipitation and faster evaporation of water, leading to greater frequency of both very wet and very dry conditions.

Sea level rise (SLR) is one of the more certain consequences of climate change; it has already had significant impacts on coastal areas and these impacts are likely to increase. Since 1852, when the first topographic maps of the southeastern United States were prepared, high tidal flood elevations have increased approximately 12 inches. During the 20th century, global sea level has increased 15 to 20 cm (NAST 2000). Analysts attribute forest decline in the Southeast in part to salt water intrusion associated with SLR. Coastal forest losses will be even more severe if SLR accelerates as is expected as a result of global warming.

Between 1985 and 1995, more than 32,000 acres of coastal salt marsh were lost in the southeastern United States due to a combination of human development activities, SLR, natural subsidence, and erosion (NAST 2000). Sea level is predicted to increase by 30-100 cm by 2100 (IPCC 2007). The vulnerability of tidal wetlands to accelerated SLR depends on geologic factors, such as tectonic uplift and glacial isostatic adjustment, which buffer shorelines from SLR, and subsidence, which accelerates it. Tide range also affects marsh vulnerability, as macro (>4 m) and meso-tidal (2-4 m) marshes are less susceptible to SLR than micro-tidal (<2 m) marshes [Stevenson and Kearney in press in (Craft et al. 2008)]. In some coastal areas, rising sea level may result in tidal marsh submergence (Moorhead and Brinson 1995) and habitat migration, as salt marshes transgress landward and replace tidal freshwater and brackish marshes (Park et al. 1991). Flood and erosion damage stemming from SLR rise, coupled with storm surges, are very likely to increase in coastal communities. Simulation modeling predicts that a 52-cm increase in SLR will lead to a decline in tidal marsh area and delivery of ecosystem services along the Georgia coast during this century (Craft et al. 2008); a 20 percent reduction in salt marsh, along with a small increase in tidal freshwater marsh (+2 percent) and a larger increase in brackish marsh (+10 percent). The decline in salt marsh is attributed to submergence and replacement by tidal flats and estuarine open water (Craft et al. 2008). Regionally, the areas most vulnerable to future sea level change are those with low relief that are already experiencing rapid erosion rates, such as the Southeast and Gulf Coast (NAST 2000).

Many ecosystems are highly vulnerable to the projected rate and magnitude of climate change. While it is possible that some species will adapt to changes in climate by shifting their ranges, human and geographic barriers and the presence of invasive non-native species will likely limit the degree of adaptation that can occur. Losses in local biodiversity are likely to accelerate towards the end of the 21st century.

It is difficult to quantify the potential effects of climate change over the next few decades on coastal and marine resources, especially as climate variability is a dominant factor in shaping coastal and marine systems. The effects of future change will vary greatly in diverse coastal

regions for the United States. Warming is very likely to continue in the United States during the next 25 to 50 years, regardless of reduction in GHG, due to emissions that have already occurred (NAST 2000). It is very likely that the magnitude and frequency of ecosystem changes will continue to increase in the next 25 to 50 years, and it is possible that they will accelerate. Climate change can cause or exacerbate direct stress on ecosystems through high temperatures, reduced water availability, and altered frequency of extreme events and severe storms. Stream and river temperatures are likely to increase as the climate warms and are very likely to have both direct and indirect effects on aquatic ecosystems. Changes in temperature will be most evident during low flow periods when they are of greatest concern (NAST 2000). In some marine and freshwater systems, shifts in ranges and changes in algal, plankton, and fish abundance are (with high confidence) associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels, and circulation (IPCC 2007).

A warmer and drier climate will reduce stream flows and increase water temperatures. Expected consequences would be a decrease in the amount of dissolved oxygen in surface waters and an increase in the concentration of nutrients and toxic chemicals due to reduced flushing rate (Murdoch et al. 2000). Because many rivers are already under a great deal of stress due to excessive water withdrawal or land development, and this stress may be exacerbated by changes in climate, anticipating and planning adaptive strategies may be critical (Hulme 2005). A warmer, wetter climate could ameliorate poor water quality conditions in places where human-caused concentrations of nutrients and pollutants currently degrade water quality (Murdoch et al. 2000). Increases in water temperature and changes in seasonal patterns of runoff will very likely disturb fish habitat and affect recreational uses of lakes, streams, and wetlands. Surface water resources in the Southeast are intensively managed with dams and channels and almost all are affected by human activities; in some systems water quality is either below recommended levels or nearly so. A global analysis of the potential effects of climate change on river basins indicates that due to changes in discharge and water stress, the area of large river basins in need of reactive or proactive management interventions in response to climate change will be much higher for basins impacted by dams than for basins with free-flowing rivers (Palmer et al. 2008). Human-induced disturbances also influence coastal and marine systems, often reducing the ability of the systems to adapt so that systems that might ordinarily be capable of responding to variability and change are less able to do so. Because stresses on water quality are associated with many activities, the impacts of the existing stresses are likely to be exacerbated by climate change.

3.3.2 Assessment of the Proposed Action on the Essential Features of Gulf Sturgeon Critical Habitat

Within Unit 12, the following four features are present and may be affected by the proposed action (1) abundant prey items; (2) water quality necessary for normal behavior, growth, and viability of all life stages; (3) sediment quality necessary for normal behavior, growth, and viability of all life stages; and (4) safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats. NMFS expects the effects of the proposed action will have only insignificant effects on water quality, sediment quality, and migratory pathway essential features.

Water quality in the action area will be affected by sediment disturbance associated with dredge-and-fill activities. Although the actual dredging will occur outside critical habitat boundaries,

the placement of dredged material will fall within the critical habitat boundary and dredging has the potential to affect adjacent waters. Dredging has been shown to increase turbidity and re-suspend both nutrients and pollutants that are trapped in the sediments. This can lead to decreases in the amount of dissolved oxygen available in the water column as (1) biological oxygen demand increases to break down suspended organic matter (nutrients); and (2) reduced light penetration associated with high turbidity results in decreased oxygen production by phytoplankton. Though we are unsure of how long any potential impacts may persist, we believe any impacts to dissolved oxygen will be temporary in nature and spatially confined. Destin Harbor, where the dredging is proposed to occur, is affected by both tidal and storm events, which result in temporary events of increased turbidity. However, these events have not resulted in hypoxia (low dissolved oxygen) and since we expect dredging impacts associated with this project will be similar in duration, we do not expect the formation of hypoxia from the proposed action. Additionally, we expect no changes in temperature, salinity, pH, hardness, and other chemical characteristics as a result of this project. Therefore, NMFS only expects insignificant effects to Gulf sturgeon critical habitat as a result of water quality impacts related to this project.

NMFS does not expect any adverse changes to the sediment quality essential feature from the proposed project as the composition of the dredged materials to be placed in critical habitat are expected to be similar to those that are currently present. The material to be placed is sand that has eroded from the peninsula into the adjacent federal navigation channel. The dredge footprint is not within Gulf sturgeon critical habitat boundaries and therefore any impacts to the sediments there are not considered.

While work along the Norriego Point peninsula will result in the addition and improvement of sediment control structures (T-groins and a rubble mound groin), NMFS believes any effects to Gulf sturgeon migratory pathways will be insignificant. The primary migration pattern of Gulf sturgeon is parallel to the shoreline in this nearshore area. We do not believe these structures will result in any effects to migration as the large majority of East Pass will remain open and unaffected by the project. All construction activity will occur directly adjacent to the existing shoreline, groins will not extend offshore more than a few hundred feet, and they will be filled with sand, making them less obtrusive. Therefore, Gulf sturgeon will still be able to migrate through East Pass, swimming parallel to shore and any effects to their migratory pathways will be insignificant.

The proposed action will directly impact the benthos through dredge and fill activities and the placement of sediment control structures. The placement of sand in open water areas to an elevation above mean high water and the placement of sediment control structures will permanently remove a portion of water bottom that could serve as foraging habitat for Gulf sturgeon. Therefore, the potential project impacts relative to Gulf sturgeon prey availability/abundance are presented in the Effects of the Action section (Section 5).

4 ENVIRONMENTAL BASELINE

This section contains a description of the effects of past and ongoing human activities leading to the current status of the species, their habitat, and the ecosystem, within the action area. The environmental baseline is a snapshot of the factors affecting the critical habitat and includes federal, state, tribal, local, and private actions already affecting the critical habitat, or that will occur contemporaneously with the consultation in progress. Unrelated, future federal actions affecting the same critical habitat areas that

have completed formal or informal consultation are also part of the environmental baseline, as are implemented and ongoing federal and other actions within the action area that may benefit listed species.

4.1 Status of Critical Habitat Within the Action Area

Of the 14 units designated as Gulf sturgeon critical habitat, only Unit 12 will be directly affected by the proposed project. Unit 12 includes the main body of Choctawhatchee Bay, Hogtown Bayou, Jolly Bay, Bunker Cove, and Grassy Cove. All other bayous, creeks, and rivers are excluded at their mouths/entrances. The western boundary is the U.S. Highway 98 bridge at Fort Walton Beach, Florida. The southern boundary is the 72 COLREGS line across East (Destin) Pass as defined at 33 CFR 80.810(f). The lateral extent of Unit 12 is the MHW line on each shoreline of the included water bodies. Note that critical habitat is not designated within Destin Harbor where the proposed dredging will occur.

Gulf sturgeon critical habitat Unit 12 encompasses a total of 79,360 ac of critical habitat and provides sub-adult and adult Gulf sturgeon winter feeding, resting, and migration habitat for the Choctawhatchee and Pea River sub-population. A 2002 study confirms this, as telemetry results show Gulf sturgeon use East Pass, nearshore waters of the Gulf of Mexico, and Choctawhatchee Bay during winter months (Fox et al. 2002). Four essential features are present in critical habitat Unit 12: abundant prey items for subadults and adults, water quality, sediment quality, and safe and unobstructed migratory pathways. However as discussed above, only the abundant prey feature may be adversely affected by the proposed action.

4.2 Factors Affecting Critical Habitat Within the Action Area

4.2.1 Federal Actions

Federal agencies that regularly consult on potential impacts to Gulf sturgeon critical habitat include the USACE, the Department of Defense (DOD), the Environmental Protection Agency (EPA), and the Bureau of Ocean Energy Management (BOEM), formerly, the Minerals Management Service. Dredging and dredged material disposal and military activities, including training exercises and ordnance detonation, have the potential to impact designated critical habitat. Oil and gas exploration and production also has the potential to impact designated critical habitat, typically through dredging or the installation of pipelines.

In 2003, NMFS completed a regional biological opinion on hopper dredging in the Gulf of Mexico that included maintenance dredging in Gulf sturgeon critical habitat Units 8-14 and concluded that when existing navigation channels within designated critical habitat are dredged to only their current depth (i.e., maintenance-dredged), without improvements (e.g., deepening or widening), the project will not destroy or adversely modify Gulf sturgeon critical habitat. This consultation includes the maintenance dredging of East Pass in Unit 12 where the current project is located.

While numerous formal (~50) and informal (~154) consultations have been conducted on potential impacts to Gulf sturgeon critical habitat since the April 18, 2003, final rule designating Gulf sturgeon critical habitat, NMFS has conducted only four formal consultations on potential impacts to Unit 12. Through these formal consultations NMFS concluded temporary adverse

effects associated with dredging to approximately 8.3 acres of federal navigation channels (East Pass and Old Pass Lagoon) and 1.41 acres of open water canal adjacent to Eglin Air Force Base. NMFS also determined that there was a permanent adverse effect to approximately 0.16 ac of critical habitat adjacent to the Eglin Air Force Base, through the installation of a boat ramp, a new pier, and a breakwater feature. Through the consultation process, NMFS determined that effects from these four projects would not result in the destruction or adverse modification of critical habitat in Unit 12.

In addition to the four formal consultations NMFS completed for activities occurring solely within Unit 12 of Gulf sturgeon critical habitat, NMFS has also completed several Section 7 consultations with the Minerals Management Service (now the Bureau of Ocean Energy Management) on activities occurring on a larger scale within the Gulf of Mexico (including Unit 12). The most recent consultation resulted in the June 29, 2007, opinion titled “Gulf of Mexico Oil and Gas Activities: Five-Year Leasing Plan for Western and Central Planning Areas 2007-2012”. This opinion concluded that actions associated with this leasing plan were not likely to jeopardize the continued existence of threatened or endangered species or destroy or adversely modify designated critical habitat. NMFS estimated the number of listed species that could potentially experience adverse effects as the result of exposure to an oil spill over the lifetime of the action. However, as discussed below, on April 20, 2010, a massive oil well explosion occurred and resulted in the release of oil at the Deepwater Horizon MC252 lease. Given the effects of the spill, on July 30, 2010, BOEM requested reinitiation of interagency consultation under Section 7 of the ESA on the June 29, 2007, opinion.

On April 20, 2010, while working on an exploratory well approximately 50 miles offshore Louisiana, the semi-submersible drilling rig Deepwater Horizon (DWH) experienced an explosion and fire. The rig subsequently sank and oil and natural gas began leaking into the Gulf of Mexico. Oil flowed for 86 days, until finally being capped on July 15, 2010. Millions of barrels of oil were released into the Gulf. Additionally, approximately 1.84 million gallons of chemical dispersant was applied both subsurface and on the surface to attempt to break down the oil. There is no question that the unprecedented DWH event and associated response activities (e.g., skimming, burning, and application of dispersants) have resulted in adverse effects on listed species and critical habitats.

At this time, the total effects of the oil spill on species and habitats found throughout the Gulf of Mexico, including ESA-listed Gulf sturgeon critical habitat, are not known. Potential DWH-related impacts to Gulf sturgeon critical habitat include direct oiling or contact with dispersants which could lead to suffocation of infaunal organisms and toxicity of substrate. There is currently an ongoing investigation and analyses are being conducted under the Oil Pollution Act (33 U.S.C. 2701 et seq.) to assess natural resource damages and to develop and implement a plan for the restoration, rehabilitation, replacement or acquisition of the equivalent of the injured natural resources. The final outcome of that investigation may not be known for many months to years from the time of this biological opinion. Consequently, other than some emergency restoration efforts, most restoration efforts that occur pursuant to the Oil Pollution Act have yet to be determined and implemented, and so the ultimate restoration impacts on the Gulf sturgeon critical habitat are unknowable at this time.

4.2.2 State or Private Actions

A number of activities that may indirectly affect Gulf sturgeon critical habitat include discharges from wastewater systems, dredging, ocean pumping and disposal, commercial and recreational fishing, and aquaculture facilities. The impacts from these activities are difficult to measure. However, where possible, conservation actions through the ESA Section 7 process, ESA Section 10 permitting, and state permitting programs are being implemented to monitor or study impacts from these sources.

Increasing coastal development and ongoing beach erosion will result in increased demands by coastal communities, especially beach resort towns, for periodic privately-funded or federally-sponsored beach renourishment projects. These activities may affect Gulf sturgeon critical habitat by burying nearshore habitats that serve as foraging areas.

4.2.3 Other Potential Sources of Impacts in the Environmental Baseline

Other activities that may affect critical habitat in the action area of this consultation include anthropogenic marine debris and pollution. Sources of pollutants along the Gulf of Mexico and Choctawhatchee Bay include atmospheric loading of pollutants such as polychlorinated biphenyls (commonly known as PCBs), stormwater runoff from coastal towns and cities into rivers and canals emptying into bays and the ocean, oil and tar discharge from tankers using Gulf waters, and groundwater and other discharges. Nutrient loading from land-based sources such as coastal community discharges is known to stimulate plankton blooms in closed or semi-closed estuarine systems. The effects on larger embayments are unknown. The impacts from these activities are difficult to measure. Where possible, conservation actions are being implemented to monitor or study impacts from these sources.

5 EFFECTS OF THE ACTION ON GULF STURGEON CRITICAL HABITAT

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02, which has been invalidated by several federal, district, and circuit courts. Instead, we have relied upon the statutory provisions of the ESA to complete our analysis with respect to critical habitat. Actions associated with this project may affect up to 10.02 ac of critical habitat (through nourishment and the placement of rock for sediment control structures). As discussed in Section 3, one of the essential features within critical habitat Unit 12 (abundant prey items) may be adversely affected by the proposed project, and therefore, potential impacts are analyzed below.

5.1 Prey Abundance

The final rule designating Gulf sturgeon critical habitat states that the abundance of prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and/or crustaceans within estuarine and marine habitats and substrates for sub-adult and adult life stages, are essential for the conservation of the species. In conducting analysis of potential adverse effects to this essential feature we consider and analyze the following factors:

1. Gulf sturgeon sub-populations using the affected critical habitat;
2. Gulf sturgeon foraging behavior;
3. Benthic community structure and Gulf sturgeon prey items; and
4. Recovery of benthic biota.

Whether individual factors are relevant to a particular action and analyzed within an opinion is highly site- and project-specific. We assess the relevant factors in order to predict the persistence and resilience of the prey resource with regard to density of current and recovering Gulf sturgeon populations. That is, numerous variables associated with Gulf sturgeon prey are considered to determine the likelihood of appropriate and abundant prey in the critical habitat unit following project construction.

5.1.1 Gulf Sturgeon Sub-populations Using Affected Critical Habitat

The total number of Gulf sturgeon using the affected critical habitat is unknown. However, the Choctawhatchee River population is estimated to be 2,000-3,000 individuals (USFWS and NMFS 2009), and at least a portion of this population likely use Choctawhatchee Bay during winter periods. We therefore estimate that the number of Gulf sturgeon using this sub-basin is in the hundreds and is likely to increase as species recovery occurs.

5.1.2 Gulf Sturgeon Foraging Behavior

Gulf sturgeon have a highly protrusible mouth that extends downward to vacuum up sediments containing their prey (i.e., infaunal macroinvertebrates). This suction feeding requires an expandable mouth cavity and a relatively narrow mouth through which to funnel water and food items (Westneat 2001). Success of suction feeding relies on the ability of the predator's mouth to protrude into the proximity of prey (Westneat 2001). The suction tube of the sturgeon's mouth must be able to maintain contact with the benthos their prey inhabit. Findeis (1997) described sturgeon as exhibiting evolutionary traits adapted for cruising the benthos in search of prey. Notably, their caudal fin morphology has presumably been adapted for benthic cruising. The hypochordal lobe is often reduced to allow sweeping of the tail while close to the substrate (Findeis 1997).

Research supports that Gulf sturgeon are typically found foraging in depths greater than 3 ft (1 m). Lower energy areas, where water depth is greater than 3 to 6 ft (1-2 m), would likely assist in foraging success given their feeding biology and the dissipation of wave energy. The protrusible mouth of these suction feeders must make contact with the benthos in order to vacuum prey out of the sediments while benthic cruising. The slightly deeper depths (2 to 4 m) the sturgeon seem to prefer (Fox et al. 2002) would have less wave energy at the substrate compared to the shallower swash zone. Downward cycloidal movement of waves dissipates energy through the water column (i.e., wave energy is exponentially dissipated with depth). A sturgeon attempting to forage in a high-energy, shallow-water environment (i.e., the swash zone) would likely have trouble remaining in place and maintaining contact with the bottom. Therefore, Gulf sturgeon foraging success would likely be greater in the slightly deeper, lower energy areas compared to the high-energy swash zone. The proposed project will be conducted in waters ranging from 0 to -12 ft, thus overlapping with the preferred feeding depths of 6-12 ft (2-4 m).

As benthic cruisers, sturgeon forage extensively in an area, presumably until preferred prey is depleted/reduced, then relocate, and resume foraging. Tracking observations by Sulak and

Clugston (1999), Fox et al. (2002), and Edwards et al. (2003) support that individual Gulf sturgeon move over an area until they encounter suitable prey type and density, at which time they forage for extended periods of time. Individual Gulf sturgeon often remain in localized areas (less than 1 sq km) for extended periods of time (greater than two weeks) and then move rapidly to another area where localized movements occurred again (Fox et al. 2002). In a multi-year study, Ross et al. (2009) found Gulf sturgeon from both the Pascagoula and Pearl Rivers broadly overlap and use the shallow water along the Gulf barrier islands as foraging grounds in the winter. These marine habitats utilized by the Gulf sturgeon were all less than 7 m deep, generally well oxygenated, and with relatively clear water. Bottom substrates were mostly coarse sand and shell fragments or fine sand (Ross et al. 2009). Edwards et al. (2007) also discussed mixing of Gulf sturgeon from different populations and overlap of winter habitat utilization. Gulf sturgeon tagged in seven Florida Panhandle river systems were monitored from Carrabelle, Florida, to Mobile Bay, Alabama, during the winter period in the coastal waters of the Gulf of Mexico; Gulf sturgeon from different river systems were located occupying the same area of marine habitat (Ross et al. 2009). While the exact amount of benthic area required to sustain Gulf sturgeon health and growth is unknown (and likely dependent on fish size and reproductive status), Gulf sturgeon have been known to travel long distances (greater than 161 km) during their winter feeding period. This supports the likelihood that any Gulf sturgeon in the action area will find appropriate and abundant prey in the areas adjacent to the project location given the proximity to nearby sandy areas that are known to support Gulf sturgeon prey.

5.1.3 Benthic Community Structure and Gulf Sturgeon Prey Items

In general, East Pass has predominantly sandy sediments that contain a high density of infaunal invertebrates such as polychaetes, annelids, and crustaceans (Fox et al. 2002). However, most Gulf sturgeon in Unit 12 have been located within the eastern and central areas of Choctawhatchee Bay where there is lower overall infaunal density and species richness (Fox et al. 2002). Researchers believe Gulf sturgeon may be targeting Ghost shrimp as prey and the nearshore waters of central and eastern portions of Choctawhatchee Bay appear to have higher densities of ghost shrimp; thus accounting for the higher abundance of Gulf sturgeon observed there. Craft et al. (2001) found that Gulf sturgeon in Pensacola Bay prefer shallow shoals with unvegetated, fine- to medium-grain sand habitats such as sandbars and sub-tidal energy zones resulting in sediment sorting and a preponderance of sand supporting a variety of prey items. Data collected within Choctawhatchee Bay (Fox and Hightower 1998, Fox et al. 2002, Parauka et al. 2001) indicate that Gulf sturgeon prefer sandy shoreline habitats with the majority of fish being located in areas lacking seagrass. Other nearshore Gulf of Mexico locations where Gulf sturgeon are often located (via telemetry and tag returns) consist of unconsolidated, fine-medium grain sand habitats, including natural inlets and passes that are known to support Gulf sturgeon prey items (Menzel 1971, Abele and Kim 1986, AFS 1989). It has been concluded that Gulf sturgeon are foraging in these sandy areas where they are repeatedly located (Fox et al. 2002), as this habitat supports their prey.

Ontogenetic changes in Gulf sturgeon diet and foraging area have been documented. Young-of-the-year (juveniles in their first year that are generally <42 cm fork length, Huff 1975) forage in freshwater on aquatic invertebrates and detritus (Mason and Clugston 1993, Sulak and Clugston 1999). Small sub-adults (reproductively immature juvenile Gulf sturgeon <5 kg) forage within their natal rivers on aquatic insects (e.g., mayflies and caddis flies), worms (oligochaete), and bivalves (Huff 1975, Mason and Clugston 1993). In contrast, adult and larger sub-adult (those >5 kg) Gulf sturgeon generally fast while in freshwater rivers (Mason and Clugston 1993) and lose a substantial percentage of their total body weight (Wooley and Crateau 1985). Therefore,

once Gulf sturgeon leave the rivers after having spent at least six months fasting, it is presumed that they immediately begin feeding in estuarine areas to compensate for the loss (Carr 1983, Wooley and Crateau 1985, Clugston et al. 1995, Morrow et al. 1998, Heise et al. 1999, Sulak and Clugston 1999, Ross et al. 2000, Gu et al. 2001). All adult and sub-adult Gulf sturgeon exit the rivers during the fall and concentrate around the mouths of their natal rivers in lakes, bays, and tidal passes (Fox et al. 2002, Rogillio et al. 2007, Ross et al. 2009). These areas are very important for the Gulf sturgeon as they offer the first foraging opportunity for the Gulf sturgeon exiting the rivers. While, the sub-adults may stay within these estuarine areas, the adults often move beyond the estuaries to feed (Fox et al. 2002, Ross et al. 2009).

Few data have been collected on the food habits of Gulf sturgeon. Their threatened status limits sampling efforts and gastric lavaging has only recently become successful. Gulf sturgeon have been described as opportunistic and indiscriminate benthivores. Generally, Gulf sturgeon prey are burrowing species (e.g., annelids: polychaetes and oligochaetes, amphipods, isopods, and lancelets) that feed on detritus and/or suspended particles, and inhabit sandy substrate. Their guts generally contain benthic marine invertebrates including amphipods, lancelets, polychaetes, gastropods, shrimp, isopods, mollusks, and crustaceans (Huff 1975, Mason and Clugston 1993, Carr et al. 1996, Fox et al. 2000, Fox et al. 2002). During the early fall and winter, immediately following downstream migration, Gulf sturgeon are most often located and presumed to be foraging in marine or estuarine areas that have depths less than 20 feet and contain sandy substrates that support burrowing macroinvertebrates (Craft et al. 2001, Ross et al. 2001, Fox et al. 2002, Parauka et al. 2001, Ross et al. 2009).

5.1.4 Recovery of Benthic Biota

Benthic biota will become permanently inaccessible from the deposition of sand for nourishment (7.16 acres for rock and sheet pile groin option or 6.65 acres for the rock only groin option) and the construction/modification of groins (1.61 acres for the rock and sheet pile groin option or 3.37 acres for the rock only groin option). Depending upon which construction option the applicant chooses (groins constructed with or without sheet pile walls) up to 10.02 acres of critical habitat may be lost, as benthic biota will no longer be available.

5.2 Summary of Effects on Gulf Sturgeon Critical Habitat

Up to 10.02 acres of potential foraging habitat will be permanently lost as sediment control structures and beach nourishment will permanently cover current water bottom. These new features are not expected to provide opportunities for the recovery of benthic biota, thus resulting in the permanent loss of this area as a potential foraging habitat.

6 CUMULATIVE EFFECTS

ESA Section 7 regulations require NMFS to consider cumulative effects in formulating their biological opinions (50 CFR 402.14). Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this opinion. Within the action area, major future changes are not anticipated in the ongoing human activities described in the environmental baseline. The present, major human uses of the action area are expected to continue at the present levels of intensity in the near future.

Throughout the coastal Gulf of Mexico, the loss of numerous acres of wetlands is occurring due to natural subsidence and erosion, as well as reduced sediment input from the Mississippi River. Impacts caused by residential, commercial, and agricultural developments appear to be the primary causes of wetland loss.

7 DESTRUCTION OR ADVERSE MODIFICATION ANALYSIS

This section analyzes the effects of this action relative to the ecological function of the essential features of designated critical habitat within Unit 12 continuing to provide sub-adult and adult feeding habitat and water quality for recovering populations of Gulf sturgeon from the Pea and Choctawhatchee Rivers (68 FR 13395). In the following analysis we demonstrate that while construction of the sediment control devices (groins) and placement of fill material in current open-water areas will impact prey abundance, Unit 12 will continue to serve its intended conservation role for Gulf sturgeon.

The placement of sand for nourishment and rock for sediment control structures (groins) will result in the permanent loss of up to 10.02 acres of potential forage habitat. However, we believe this loss of prey availability will not appreciably diminish the ecological function of Unit 12 in the conservation of Gulf sturgeon as high-use forage grounds will continue to be available nearby. More specifically, the known forage areas located within eastern and central Choctawhatchee Bay (Fox et al. 2002) will be avoided and therefore continue to provide the ecological functions of critical habitat.

8 CONCLUSION

After reviewing the current status of the Gulf sturgeon's critical habitat in Unit 12, the environmental baseline, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the project activities in East Pass will not reduce the critical habitat's ability to support the Gulf sturgeon's conservation. Following the project activities up to 10.02 acres of critical habitat will cease to function as forage habitat, thereby reducing the prey availability. However, NMFS does not expect the loss of foraging habitat (prey availability) resulting from the nourishment of Norriego Point and the construction of beach groins to appreciably reduce the value of Gulf sturgeon critical habitat. NMFS concludes the action, as proposed, is not likely to destroy or adversely modify designated Gulf sturgeon critical habitat.

9 INCIDENTAL TAKE STATEMENT

NMFS does not anticipate that the proposed action will incidentally take any protected species and no take is being authorized. However, if such a take occurs, the Jacksonville District USACE shall immediately notify NMFS by e-mail (takereport.nmfsser@noaa.gov) and reference this biological opinion by its title, issuance date, and Public Consultation Tracking System identifier number SER-2012-2282. In addition to e-mail notification, USACE may also notify NMFS by phone [(727) 824-5312] and/or fax [(727) 824-5309].

10 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to utilize their authority to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species to help implement recovery plans or to develop information. NMFS believes the Jacksonville District USACE should implement the following conservation recommendations.

1. Gather data describing recovery rates of Gulf sturgeon prey species in response to re-colonization of sand substrate that would assist in future assessments of impacts to Gulf sturgeon prey items.
2. Gather data describing Gulf sturgeon movements within Choctawhatchee Bay and between critical habitat units.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendations.

11 REINITIATION OF CONSULTATION

This concludes formal consultation on the Norriego Point peninsula nourishment and stabilization project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of taking specified in the incidental take statement is exceeded, (2) new information reveals effects of the action may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

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Noise Thresholds and Calculations

NMFS conducted a noise exposure analysis to determine if and to what degree noise may affect protected species within the action area of the project. To accomplish this analysis NMFS used underwater injury and behavioral thresholds for various sizes of fish¹ and sea turtles² based on the most currently accepted criteria (Table 1). When source levels are greater than the thresholds, there are impacts to the organisms. We can calculate the distance necessary for sound to become reduced below threshold levels using a “15 log R” equation.

Table 1. Threshold noise levels for fish and sea turtles.

Impact	Organism	Underwater threshold
Injury	All fish	206 dB peak
	Fish \geq 2 grams	187 dB (SEL)
	Fish < 2 grams	183 (SEL)
	Sea turtles	187 dB (SEL)
Behavior	Fish	150 dB (RMS)
	Sea turtles	166 dB (RMS)

Definitions

Peak Pressure: Peak pressure is the maximum positive pressure between zero and the greatest pressure of signals in units of dB re 1 $\mu\text{Pa}_{\text{peak}}$ or 0-peak . Peak levels are generally higher than RMS levels and often used to determine injury ranges from pressure.

Sound Exposure Level (SEL): SEL is the time cumulative sum of squares pressure divided by the duration of the sound (usually 1 second for a pile driving strike). SEL levels have units of dB re 1 $\mu\text{Pa}^2 \cdot \text{s}$ and can be used to calculate the cumulative risk to multiple exposures over time from repeated pile driving strikes.

Root Mean Square (RMS): The square root of the average of the square of the pressure of the sound signal over a given duration in units of dB re 1 $\mu\text{Pa}_{\text{rms}}$. Often used to determine behavioral responses to audible sounds.

No source sound levels were provided by the applicant, so NMFS used information from the Illinworth and Rodkin (2007) publication as the best data available.³ The applicant intends to use a pneumatic vibratory hammer to install 21- to 30-inch steel sheet piles. Information from

¹ Federal Highway Administration. 2012. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Final. February. (ICF 645.10.) Prepared by ICF International, Seattle, WA.

² McCauley, R.D., J. Fewtrell, A.J. Duncan, C. Jenner, M.N. Jenner, J.D. Penrose, R.I.T. Prince, A. Adhita, J. Murdoch, and K. McCabe. 2000a. Marine seismic surveys: analysis and propagation of air-gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid. A Report Prepared for the Australian Production Exploration Association. Project CMST 163, Report R99-15. 198 pp.

³ Illinworth and Rodkin. 2007. Compendium of Pile Driving Sound Data. Prepared for California Department of Transportation, Sacramento, CA by Illinworth and Rodkin, Petaluma, CA.

the Illinworth and Rodkin (2007) paper is based on using a vibratory hammer to drive 24-in steel sheet piles (Table 2). However, since this data referenced the sound level at 10 m, rather than at the source, we conducted a back calculation to the source by determining the decibel loss over the 10 m using the following steps:

- The dB loss over 10 m was determined using the 15 log R spreading loss equation with our in-house calculator.
- We calculated a 15 dB attenuation loss
- An attenuation loss of 15 dB was added to each referenced noise level to determine the source level for each dB unit of measurement.

Table 2. Estimated source sound levels for the installation of steel sheet piles using a vibratory hammer.

Reference Unit (dB)	Reference Level ^a	Sound loss over 10 meters	Source Level used for analysis
Peak pressure	182 dB	15 dB	197 dB
RMS	165 dB	15 dB	180 dB
SEL	165 dB	15 dB	180 dB

^aPile driving data from Illinworth and Rodkin (2007)

The estimated source sound levels for the installation of steel sheet piles from Table 2 (180 dB for both SEL and RMS) indicate that the source sound level will not exceed the thresholds for injurious effects to fish and sea turtles (187 dB – SEL). However, the source sound levels will exceed the behavioral threshold for fish (150 dB – RMS) and sea turtles (166 dB – RMS) from Table 1. Therefore, to determine the distance from the source that could cause behavioral effects to fish we subtracted the threshold (150 dB) from the source (180 dB) and used our in-house spreading loss calculator to determine the distance needed for sound to reduce to that value (30 dB). From the table below, at a range of 100 meters, the 15 log R spreading loss is 30 dB. This same calculation was conducted to determine the distance required for sound to dissipate below behavioral threshold levels for sea turtles as well, and was determined to be approximately 10 meters.

Table 3. Spreading loss calculator showing the dissipation of sound over distance.

Spherical (20 logR) and Cylindrical (10 and 15 logR) Spreading Loss				
<i>Instructions: Input range from source to obtain spherical and cylindrical spreading loss (- dB)</i>				
Range (m)	log (R)	20 logR Spherical Spreading Loss (- dB)	10 log R Cylindrical Spreading Loss (- dB)	15 log R Cylindrical Spreading Loss (- dB)
1	0	0	0	0
2	0.301029996	6.020599913	3.010299957	4.515449935
4	0.602059991	12.04119983	6.020599913	9.03089987
8	0.903089987	18.06179974	9.03089987	13.5463498
10	1	20	10	15
25	1.397940009	27.95880017	13.97940009	20.96910013
50	1.698970004	33.97940009	16.98970004	25.48455007
100	2	40	20	30
200	2.301029996	46.02059991	23.01029996	34.51544993
2000	3.301029996	66.02059991	33.01029996	49.51544993
10000	4	80	40	60
100000	5	100	50	75
500000	5.698970004	113.9794001	56.98970004	85.48455007
1000000	6	120	60	90