POTENTIAL DEEPWATER HORIZON OIL SPILL RESTORATION PROJECTS:
PROVIDING INFORMATION TO ASSIST WITH PROJECT ASSESSMENT

To help you propose projects to the State of Florida's Department of Environmental Protection (DEP), we developed this project submission form. You are not required to complete this form to submit a project. However, completion of the form will help DEP gather the information required to completely and accurately evaluate a project against the selection and evaluation criteria. Where appropriate in the form, please provide references to any additional supporting information.

Project Name: *(Include project number from DEP's existing list of submitted projects, if applicable.)*

Okaloosa Island Beach Reef

Location for Project Implementation: *(For example, city and county, GIS coordinates if known.)*

Gulf of Mexico, Okaloosa County, nearshore from Beach Access #4. Centered approximately 30° 23.722'N, 86° 37.012'W

Brief Project Narrative: *(Describe what the project will do.)*

This scope of this project includes the design, construction and monitoring of a nearshore artificial reef that will be accessible from shore and designed for use by snorkelers, kayakers, fishermen and divers. This reef system will be constructed from the EcoSystem (or equivalent) reef construction process. The construction effort will be performed as a turn-key project by a single-contractor located in Orange Beach, AL. A joint Federal and State permit application was submitted in the fall of 2012. The permit application contains relevant specifications of the project and can be found as an attachment to this submittal.

In short, the Okaloosa Island Beach Reef will consist of approximately 50 pilings driven into the seabed that have specially designed limestone embedded forms lowered onto the pilings to provide habitat for marine life. This design has proven to be stable, durable and attractive to marine life and has been installed in adjacent County waters.

Estimated Project Costs: *(Describe the costs of the project, including any assumptions for contingency and ongoing operations and maintenance. Identify other available funding sources such as matching funds, in kind contributions or state or federal dollars. If possible, attach a schedule of anticipated costs, by year, over the anticipated project life.)*

This project can be completed within 12 months of award.

There are generally 4 Phases to the construction process;

1. Procurement of materials,
2. Transport of materials to the construction site,
3. On-site Construction activities, and
4. Evaluation of deployment objectives.

The County will pursue

Final Design – $10,000 – 3 – months - The basic design has been submitted in the permit application attached. However, field verification of the submerged deployment area remains to be performed and a shoreline survey will be required before the Final design can be completed.

Permitting - $2,000 – 4 months - The construction of the reef will be permitted as a structure rather than "dredge and fill" which significantly reduces the permit acquisition timeline. As noted previously, a permit application (attached) for the construction of the Island Reef has been submitted to the Florida Department of Environmental Protection and the US Army Corps of Engineers. The FDEP has issued a permit for construction of the reef and the USACE Project Manager estimates that the federal permitting process will conclude by the fall of 2013.

Project Administration - $5,000 – 3 months - Project Administration costs are implementation of project controls (budgets, schedules and management/oversight of activities) throughout the project duration.

Construction - $265,000 – 2 months – The construction effort includes the transportation of reef structure materials to the site, the assembly of each of the approximately 50 piling/reef disc structures (approximately 5 per piling), the GPS assisted installation of the 50 reef structures, and the post-placement verification of the individual reefs.

Monitoring - $20,000 – 4 events, semi-annually – Monitoring of the reef structures will provide data that will document the initial condition of the reef system and the development of the system over 2 years. The dataset will include observations of marine species present and the general condition of the system and its appurtenances. It is anticipated that the Okaloosa Island reef will attract many users and a variety of user groups. The documentation of the impact of this use will serve to determine whether additional features could be added to make the system more accessible and/or durable. During the monitoring events, foreign materials such as fishing line or flotsam will be removed. Data collected from the monitoring events will also aide in the future design of similar systems.

Total - $302,000

Anticipated Project Outcome with Respect to Screening Criteria

S1. Technically and administratively feasible: *(Briefly describe the critical technologies involved and any relevant past experience with similar projects.)*

The Okaloosa County Artificial Reef Program has managed over 1500 artificial reef construction projects and deployments and can organize the project to utilize local contractors with the expertise and experience to execute projects in our unique regional marine environment. The County program is experienced in management and execution of the types of projects presented in this proposal. The contractors utilized to perform the bulk of the field work are extensively screened to determine competency, experience and understanding of project objectives. The construction of the reef system is a turnkey process and the contractor who provides the service has proven the technology and techniques utilized in the construction of the reef system meet the expectations of the design.

This project will incorporate the use of *EcoSystems* reef product (see Permit Attachment). The *EcoSystems* artificial reef system design offers small marine species shelter and protection and a foundation for a vibrant reef ecosystem. Florida limestone rock replicates natural reef substrate and pH desirable by seed organisms necessary to sustain a healthy reef structure that closely mimics natural reef habitats. The piling mount system guarantees the unit will stay upright negating settling and allows for repetitive maintenance and/or repair. *EcoSystems* are relatively easy to install. They are adaptable to incorporate special user needs by employing variable shapes, sizes, offset mounting holes, and piling or pedestal mounts. They can be reconfigured to different heights, distance above the bottom and adjustable complexity. The structural design is ideal for defusing wave energy. They can be installed in high-wave energy areas without significant storm event damage to the structure.

The manufacturer of the *EcoSystems* reef system is also located in the oil-spill impact area and has installed the *EcoSystems* in nearshore waters in various locations off of neighboring Escambia and Santa Rosa Counties. The project will contract local consultants experienced with streamlining reef area permitting and the Okaloosa County reef program will provide site-specific permitting, state regulatory coordination, deployment and construction oversight as well as management of all other project related activities.

S2. Provides environmental benefits: *(Briefly describe the nature, magnitude, and timing of any environmental benefits attributable to the project and any potential environmental costs associated with implementing or maintaining the project, e.g., loss of a habitat or conversion of habitat from one type to another during implementation.)*

The local marine environment off of Okaloosa County is relatively featureless. It has been well documented that the addition of submerged structure has an immediate positive impact on the marine environment. The Okaloosa County Artificial Reef Program is the permitting agency charged with the oversight of all artificial reef construction, both private and public, in the waters off of Okaloosa County. Expansion of the local reef systems is highly desirable to the citizens of Okaloosa County and the visitors to the area. The proper construction of artificial reefs provides habitat to a wide variety of marine life including target reef species such a snapper, grouper, amberjack and a variety of pelagic species. In addition, the presence of smaller marine species that find refuge on and around artificial reef, will sustain the environment until the structure has completely dissentigrated. The construction of an artificial reef represents the construction of <u>new</u> habitats with a very low maintenance requirement.

The reef construction process utilizes existing natural resources to construct the asset. Seawater is jetted into the seafloor while the main support pilings are lowered into the void. Turbidity is minimal since the material mobilized by the jetting action is the natural material at the location which consists of very little material that could release suspended particulates into the water column. No materials are introduced into the effort that would cause a turbid environment. Particulates evacuated in the jetting process quickly resettle onto the seabed.

S3. Does not conflict with any ongoing or planned response or remediation work: *(Briefly describe ongoing response activities in the project implementation area, if any, and why the project does or does not interfere with that work.)*

There is no response or remediation work in the proposed reef construction area.

S4. Complies with applicable and relevant federal, state, local, and tribal laws and regulations: *(No information is needed for these screening criteria.)*

This project is regulated by federal state and local rules and regulations. The Okaloosa County Artificial Reef Program provides local regulatory oversight and works closely with the US Army Corps of Engineers and Florida Department of Environmental Protection in the permitting process of the applicable reef deployment area. The Florida Fish and Wildlife Conservation Commissions – Division of Marine fisheries provides guidance applicable to the planning, execution and long-term monitoring of County reef projects.

One State and one Federal permit are required to be obtained by OCARP prior to construction. Both of these permits are "noticed" general permits which require public notice and project reviews from:

- Florida Department of Environmental Protection (FDEP)
- US Army Corps of Engineers (USACE) - Mobile District Operations and Management
- US Coast Guard (USCG) - 8th District
- National Marine Fisheries (NMFS) - PRD in St. Petersburg
- National Oceanographic and Atmospheric Administration (NOAA) - Office of Coast Survey
- Bureau of Ocean Energy Management (BOEM)
- Florida Fish and Wildlife Conservation Commission (FWC)
- US Federal Fish and Wildlife (FWS)
- State Historic Preservation Office (SHPO)
- EPA Gulf States Marine Fisheries Commission
- Gulf of Mexico Fishery Management Council

The State permit has been granted. The Federal permit was submitted to the USACE on September 27, 2012 and is currently under review.

Anticipated Project Outcome with Respect to Evaluation Criteria

E1. Will restore, rehabilitate, or replace a natural resource or service[1] believed/demonstrated to have been injured as a result of the Deepwater Horizon oil spill or associated response activities: *(Briefly describe the nature of any relationship between the new/improved resources or services and those adversely impacted by the oil spill.)*

Okaloosa County experienced significant loss of use of our nearshore/offshore Gulf waters resources as a result of the Deepwater Horizon oil spill. This project, upon completion, will aide in enhancing marine resources available for local residential and commercial use and as an attraction for our significant tourist industry. The enhanced marine resource will result in an overall increase in marine biomass and serve as a safe haven for migratory juvenile species from inshore spawning areas to permanent offshore habitats. The project will also provide recreational opportunities to a wide variety of user groups and relieve pressure on existing reef systems.

[1] In this form, "Services" (or "natural resource services") refers to the functions performed by a natural resource for the benefit of another natural resource and/or the public. Services can be "ecological services" – physical, chemical or biological functions that one

E2. Is located in, or nearby, resources or services injured by the deepwater horizon spill: *(Briefly describe where the project would be implemented with respect to past/ongoing remediation work.)*

Okaloosa County experienced impacts to its coastal shoreline and inland waters as a result of the Deepwater Horizon oil spill. The County had documented incidents of product washing on shore, as well as floating product observed in the East Pass area of Choctawhatchee Bay. The proposed reef system will be located directly seaward from Beach Access #4 on Okaloosa Island where active cleanup of deepwater horizon spill was conducted. The proposed reef will be accessible by kayakers, swimmers and recreational boaters.

E3. Is ready for implementation, e.g., design, permitting, and necessary impacts assessments have been completed: *(Briefly describe where in the permitting process the project stands along with an estimated date of when the project can be implemented if it is not currently ready.)*

One State and one Federal permit are required to be obtained by OCARP prior to construction. Both of these permits are "noticed" general permits which require public notice and project reviews from:

- Florida Department of Environmental Protection (FDEP)
- US Army Corps of Engineers (USACE) - Mobile District Operations and Management
- US Coast Guard (USCG) - 8th District
- National Marine Fisheries (NMFS) - PRD in St. Petersburg
- National Oceanographic and Atmospheric Administration (NOAA) - Office of Coast Survey
- Bureau of Ocean Energy Management (BOEM)
- Florida Fish and Wildlife Conservation Commission (FWC)
- US Federal Fish and Wildlife (FWS)
- State Historic Preservation Office (SHPO)
- EPA Gulf States Marine Fisheries Commission
- Gulf of Mexico Fishery Management Council

The State permit has been granted. The Federal permit was submitted to the USACE on September 27, 2012 and is currently under review.

The design work is complete. Attached is the permit application for this project that includes figures and other supplemental information . Additional environmental impact assessments will not be necessary for this project.

Once the project is permitted, the County will solicit for bids, award a contractor and begin construction. This process will take approximately 3 months to complete prior to construction. Construction is estimated to take 1 month.

natural resource provides for another (such as provision of food) – or "human services" – the use of natural resources used by humans that provide value to the public (such as hunting and fishing).

E4. Is cost effective: *(Briefly describe why you think the project is cost effective. Discuss whether this project is more cost effective than alternative projects which would provide similar resource or service benefits.)*

Construction of artificial reefs has been documented as providing an excellent cost benefit ratio and the support of the citizens of Okaloosa County. Recently, a study performed by the Florida Sea Grant was reported by UF/IFAS News that the "Study finds artificial reefs are economic boon, and enjoy widespread public support." A link to the news article and report is as follows:

http://www.flseagrant.org/index.php?option=com_content&view=article&id=284:economic-impacts-of-artificial-reefs&catid=51:research-summary&Itemid=101

A copy of the report is attached to this proposal as Attachment F – Economic Impacts of Artificial Reefs.

Okaloosa and other panhandle counties share a similar geographical and economic demography with the southwest Florida study area and a projection of the conclusion to northwest Florida county is comparable.

As per the County Artificial Reef Five Year Plan - "*Artificial reefs are an important component of the recreational fishing and diving opportunities available to Okaloosa County residents and visitors. Most natural "live bottom" reef formations and communities exist farther offshore from Destin Pass than in other parts of the state. The scarcity of live bottom formations in the northeastern Gulf of Mexico is documented in a 1992 Continental Shelf Associates, Inc. report to NOAA; an estimated 3% of the local seafloor contains natural reef formations. The estimated 2003 population of Okaloosa County is 178,104; a 4.5% increase since the US Census conducted in 2000. Vessel registration records for 1997/98 indicate that there are at least 9,000 boats in Okaloosa County capable of utilizing artificial reefs in local waters. The charter fishing and SCUBA diving fleet is composed of over one hundred vessels. A 1999 survey of Destin charter boat operators indicates that these vessels utilize artificial reefs more than 50% of the time. Of the $713 million economic impact of tourists in 1997/98, over $61 million can be attributed to the boating and charter fishing industry. In a 1999 report to Florida DEP Office of Fisheries Management and Assistance Services ("Economic Impact and Importance of Artificial Reefs in Northwest Florida"), Dr Frederick Bell estimates total revenues attributable to artificial reefs for 1997/98 to be $125.94 million. Thus Okaloosa County has an economic interest in maintaining and enhancing local waters through the artificial reef program."*

E5. Has a high potential for long-term success as demonstrated by incorporating established/reliable methods and technologies: *(Briefly describe if/how critical methods and technologies that will be used to implement the project could be considered reliable or proven.)*

The proposed Island Reef system provides a foundation for marine life to begin and perpetuate their natural life-cycle. A minimal amount of monitoring can confirm that this process has begun. Ironically, the biggest threat to this asset is the same environment in which it succeeds. The saltwater marine environment is extremely harsh and includes not only from the water but extreme climactic phenomenon such as tropical storms and hurricanes. However, the design of the reef systems proposed includes the integration of materials that have demonstrated excellent resilience in the saltwater marine environment and effectively resists extreme climatic forces. The semi-modular design of the asset design has demonstrated proficiency as a wave attenuator and is currently being deployed at several locations off of Santa Rosa and Escambia Counties adjacent to Okaloosa County. In the event of damage to the individual reef modules, replacements and repairs can be made to the modules without impact to the entire reef network.

E6. Is likely to provide benefits rapidly following implementation: *(Briefly describe the anticipated change in benefits anticipated over time.)*

Once construction of the reef is complete, benefits are realized immediately. The structures themselves, devoid of marine life, provide a visual complexity that is attractive to user groups like divers and snorkelers. Past monitoring on newly deployed reef materials show that large schools of bait fishes and other small migrating fishes are attracted to the reef during the construction process and continue to utilize the reef once construction is complete. Other marine species begin to populate and propagate throughout the reef network within days of construction. A monitoring report of a recent deployment of a tugboat in May 2011 received in December 2011 indicated that the vessel was "covered up" with bait fish and also present were target species like gag grouper, triggerfish, amberjack and schools of red snapper. The presence of this magnitude and variety of marine life is not uncommon for northwest Florida artificial reef projects.

E7. Has a high likelihood of public acceptance: *(Briefly describe evidence to support the given answer based on surveys or results and assessments from past projects. Known or likely opposition to a project should be recognized.)*

Some of the data shared in Section E4 above is applicable to this Section as well.

The design of the Okaloosa Island Reef is relatively new. Fortunately for Okaloosa County, the two Florida Counties to the west have had this type of reef system constructed in their waters. Both of these counties have received tremendous public support. Since Okaloosa County demographics are very similar to our neighbors, there is no reason to believe that Okaloosa County will not receive the same level of support. The County Tourist Development Department is solidly behind the project and will assist in promoting the asset to County visitors.

Preliminary data from a public opinion survey being conducted July/August of 2013 shows very high support (80%-90%) for the County reef program and projects. The survey effort will conclude in August 2013.

WE WANT YOUR INPUT!

Submit this form via email to Rebecca Wintering at Rebecca.Wintering@dep.state.fl.us . If you have any questions or concerns about the process for submitting a project, please contact Rebecca Wintering at:

Rebecca Wintering
Environmental Specialist III
3900 Commonwealth Boulevard, MS 235
Tallahassee, FL 32399
Rebecca.Wintering@dep.state.fl.us

A current summary of projects is accessible through the Florida DEP's website at http://www.dep.state.fl.us/deepwaterhorizon/projects.htm (click on "*View the list of restoration project ideas*").

Form # 62-346.900(2)
Title: Notice of Intent to Use An Environmental Resource Noticed General Permit in Northwest Florida
Effective Date: November 1, 2010
Incorporated by reference in 62-346.070(2), F.A.C.

NOTICE OF INTENT TO USE AN ENVIRONMENTAL RESOURCE NOTICED GENERAL PERMIT IN NORTHWEST FLORIDA

A. General Information

1. Applicant Information

Name: Okaloosa County Board of County Commissioners

Mailing Address: 1804 Lewis Turner Blvd - Suite 100

City: Fort Walton Beach State: FL Zip Code: 32547

Telephone: (850) 651-7105 Fax: _____ E-mail: _____

2. Agent Information

Name: Scott Henson

Corporate or Agency Name: Okaloosa County Artificial Reef Program

Mailing Address: 84 Ready Avenue

City: Fort Walton Beach State: FL Zip Code: 32548

Telephone: (850) 609-6165 Fax: _____ E-mail: _____

3. Rule section number of the NGP for which you are applying: 62-341. 600 , F.A.C.

4. Location of proposed activities:

Address: (offshore Henderson State Park)
City: Destin Zip Code: 32541 County(ies): Okaloosa
In (name of waterway): Gulf of Mexico
Latitude (DMS) 30° 22' 49.08" Longitude (DMS) 86° 26' 6"
Datum NAD83 (Taken from Central Location)
Tax Parcel Identification Number: NA

5. Date activity is proposed: To Commence: Fall 2012 To be Completed: Spring 2013

6. Total Extent of Work in Wetlands and Other Surface Waters: (Use additional sheets and provide breakdown of each category if more space is needed.)

a. Within Federal Jurisdiction:
Fill - 0 Sq. Ft.; 0 Acres; 0 Cu. Yds.
Excavation - 0 Sq. Ft.; 0 Acres; 0 Cu. Yds.

b. Within State Jurisdiction:
Fill - 0 Sq. Ft. or 0 Acres; 0 Cu. Yds.
Excavation - 0 Sq. Ft. or 0 Acres; 0 Cu. Yds.
Fill Waterward of Mean or Ordinary High Water - 0 Cu. Yds.
Excavation Waterward of Mean or Ordinary High Water - 0 Cu. Yds.

c. State Jurisdictional Area that will be Severed Landward of Any Fill: __0__Sq. Ft. or _____ Acres

d. State Jurisdictional Area to be Created from Uplands, Excluding Mitigation: __0__Sq. Ft. or_____ Acres

e. Docks, Piers, and Over Water Structures:
Total Number of Slips __0__ Total number of mooring pilings __0__
Length _____ Width _____ Height above MHW _____
Length _____ Width _____ Height above MHW _____

Number of Finger Piers__0_____ Length_____ Width_____ Height _____
Number of Finger Piers __0_____ Length_____ Width_____ Height _____

Total area of structure over waters & wetlands __0__ sq. ft.
Use of structure __NA_____

Will the docking facility provide:	No	Yes	Number
Liveaboard Slips	☒	☐	_____
Fueling Facilities	☒	☐	_____
Sewage Pump-out Facilities	☒	☐	_____
Other Supplies or Services	☒	☐	_____
Other Supplies or Services Required for Boating (Excluding refreshments, bait and tackle)	☒	☐	_____

f. Seawall length:__0_____ft. Seawall material:_NA_____
Riprap revetment length: __0___ft. Slope_____H: _____V Toe width_____ ft.
Riprap at toe of seawall length__0_____ft. Slope_____ H:_____ V Toe width_____ ft.
Size of riprap __NA_____ Type of material __NA_____

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7. Stormwater Information

a. Project area: __NA___ ac. Total applicant-owned area contiguous to project: _____ ac.
b. Total area served by system: _NA____ ac.
c. Impervious area excluding wetlands and other surface waters: __NA___ ac.
d. Volume of water that the system is capable of impounding: _NA____ ac. ft.
e. Name of project, including phase if applicable: _NA____
f. Is this application for part of a multi-phase project? ☐yes ☐no. If you answered yes, please provide permit numbers for other authorized phases:

Agency	Date	No.\Application Type
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

g. Treatment type proposed: __NA_____.
h. Current site conditions and land uses:_NA_____
i. Proposed Land Use:_NA_____
j. Names and classifications of all receiving waters (if available):__NA_____

8. **All Proposed Activities—Describe Proposed Activities (be specific; use additional sheets as necessary).**
   a. What is proposed? Authorization is being sought to deploy artificial reef material in a single artificial reef deployment area. The deployment area is 200 ft by 590 ft in dimension (118,000 sq ft - 2.7 ac) located approximately 340 ft south of the mean low water line from Crystal Beach (Henderson Beach State Park) in depths of minus -9 ft to -17 ft NAVD 88. The County will place about 52 Pre-fabricated Multi-media Reef Modules (Walter Eco-System Reef Modules or similar) throughout the deployment site as indicated in the supplemental information attached to this document. Each reef module comprises a stack of concrete disks, approximately 5 ft in diameter with a center support pole extending into the substrate. The top of each reef will extend upward in the water column to a maximum of 6 ft below the mean low water elevation and at no time shall exceed 1/2 the distance between the seafloor and sea surface mean low water elevation. See attached Supplemental Information and Biological Assessment for additional details.

   b. Describe wetland and aquatic habitats to be affected: See attached Supplemental Information and Biological Assessment for additional details.

   c. Construction methods and schedule: See attached Supplemental Information and Biological Assessment for additional details.

   d. Additional information that demonstrates that you qualify for the general permit, addressing all the parameters, thresholds, and conditions required in the general permit. The proposed project meets all the requirements of Chapter 62-341.600 – General Permit for the Construction of Artificial Reefs.

9. **Permanent and Temporary Turbidity, Erosion, and Sedimentation Controls Proposed:** Only clean materials will be deployed; the applicant will make those materials available for inspection prior to installation. Placement includes only jetting posts into the substrate and placing the disks on the posts. Therefore the contractor will not employ turbidity, erosion, and/or other sedimentation controls.

10. **Previous Applications for this Project have been: NA**

	Date(s) mm/dd/yyyy		By:		
a. Issued	____/____/____	**DEP/DER No.**	____	**Corps No.**	____
b. Denied	____/____/____	**DEP/DER No.**	____	**Corps No.**	____
c. Other (please explain): ____					

B. Drawings

Please provide scaled or fully dimensioned plan (overhead) and profile (side-view) drawings that clearly delineate and identify the extent of the proposed activities on drawings of an appropriate size. If the work involves activities located within federal or state wetlands or other surface waters, submit an additional set of drawings on 8 ½" x 11" paper. All drawings must include the following, clearly and accurately depicted:

a. Existing approximate mean high water (MHW/OHW) shoreline.
b. Applicant's property boundaries and dimensions.

c. North arrow.
d. Location and dimensions of all existing structures.
e. Location and dimensions of proposed activities.
f. Boundaries of wetlands and other surface waters, identifying open water areas. Cross-hatch limits of proposed excavation in wetlands and other surface waters, and hatch limits of proposed fill in wetlands and other surface waters.
g. Boundary area and volume of all temporary and permanent earthwork, including pre- and post-construction grades.
h. Label all impervious and pervious areas, and indicate their size (area).
i. Drainage and flow patterns on the property.
j. Distances of project in relation to permanent landmarks (i.e. trees, buildings, etc.) as appropriate,
k. Location map(s), clearly locating the proposed project location in relation to streets and roads, which should be clearly labeled. Provide directions to get to site if necessary.
l. Note: Plans, drawings, and supporting calculations must be signed, sealed, and dated by a registered professional, as required by the relevant statutory provisions when the design of the system requires the services of a registered professional.

C. Certification

I hereby certify I have read and will conduct the above activities in accordance with the criteria, limitations, and Specific Conditions of the general permit identified in Item 3, and in accordance with the General Conditions of Rule 62-341.215, F.A.C. Unless otherwise provided in Chapter 62-341, F.A.C., activities conducted pursuant to the above general permit may commence thirty (30) days after receiving written acknowledgment that notice has been provided to the Department of Environmental Protection or the Northwest Florida Water Management District, along with any required additional documentation which may be required to fulfill the requirements of the general permit, unless the Department or Northwest Florida Water Management District responds that the proposed work does not qualify for a general permit. Written acknowledgment may include certified mail return receipt.

I understand I may have to provide any additional information/data that may be necessary to provide reasonable assurance or evidence that the proposed project will comply with the applicable State Water Quality Standards or other environmental standards both before construction and after the process is completed.

I further acknowledge that work done under this general permit may also require the review and approval of other Federal, State, or local agencies, and that commencement of construction before such Federal, State, or local agency approvals or permits are obtained may subject me to enforcement action and fines or penalties by such agencies. Further, the work shall be conducted in a manner that does not violate applicable water quality standards.

In addition, I agree to provide entry to the project site for inspectors with proper identification or documents as required by law from the environmental agencies for the purpose of inspecting the site. Further, I agree to provide entry to the project site for such inspectors to monitor permitted work.

Scott R. Henson	Scott R. Henson	4/12/12
Typed/Printed Name of Applicant or Agent	Signature of Applicant or Agent	Date

An Agent May Sign Above If Applicant Completes the Following:
I hereby designate and authorize the agent listed in Item 2 to act on my behalf as my agent in the processing of this permit application and to furnish on request, supplemental information in support of the application.

Typed/Printed Name of Applicant (and Corporate Title, if applicable)	Signature of Applicant	Date

D. For systems that require the certification of a registered professional:

This is to certify that the features of the system that are the subject of this application have been designed by me or my designee under my direct supervision and have been examined by me and found to be in conformity the laws and other requirements of my professional practice act. I further certify that the system has been designed in accordance with the applicable criteria and specifications required by the "Department of Environmental Protection and Northwest Florida Water Management District Environmental Resource Permit Applicant's Handbook—Volume I (General and Environmental) and Volume II (Design Requirements for Stormwater Treatment and Management Systems — Water Quality and Water Quantity)" effective November 1, 2010.

Name of Registered Professional:_____

Florida Registration Number:_____

Company Name:_____

Mailing Address:_____ (Affix Seal)

City:_____State:_____Zip Code:_____

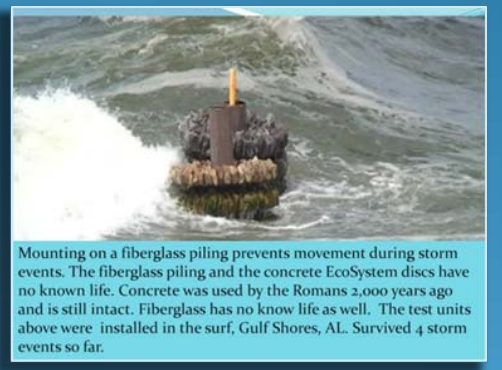
Telephone:_____Fax:_____E-mail:_____

_____ _____
Signature of Registered Professional Date

E. Submittal

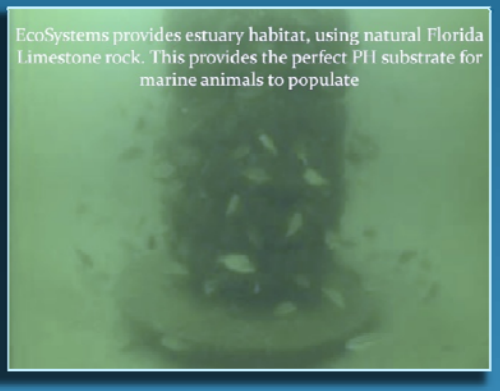
Submit this completed form, with attached drawings and with the noticed general permit processing fee of $250, made payable to the "Florida Department of Environmental Protection," or the "Northwest Florida Water Management District (WMD)," in accordance with the responsibilities of these agencies as provided in Chapter 62-346, F.A.C.

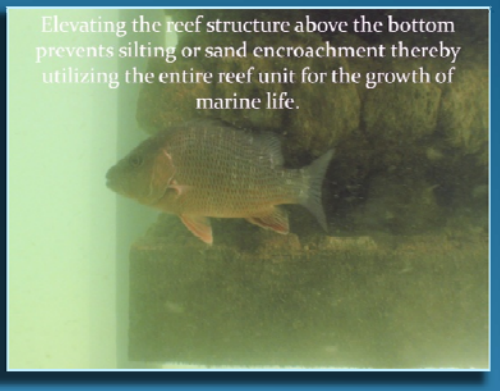
ATTACHMENT A – EcoSystem Artificial Reef System
Okaloosa County , Florida

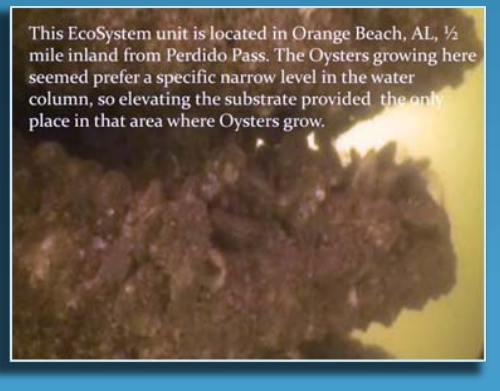


Mounting on a fiberglass piling prevents movement during storm events. The fiberglass piling and the concrete EcoSystem discs have no known life. Concrete was used by the Romans 2,000 years ago and is still intact. Fiberglass has no know life as well. The test units above were installed in the surf, Gulf Shores, AL. Survived 4 storm events so far.

ATTACHMENT A – EcoSystem Artificial Reef System
Okaloosa County , Florida







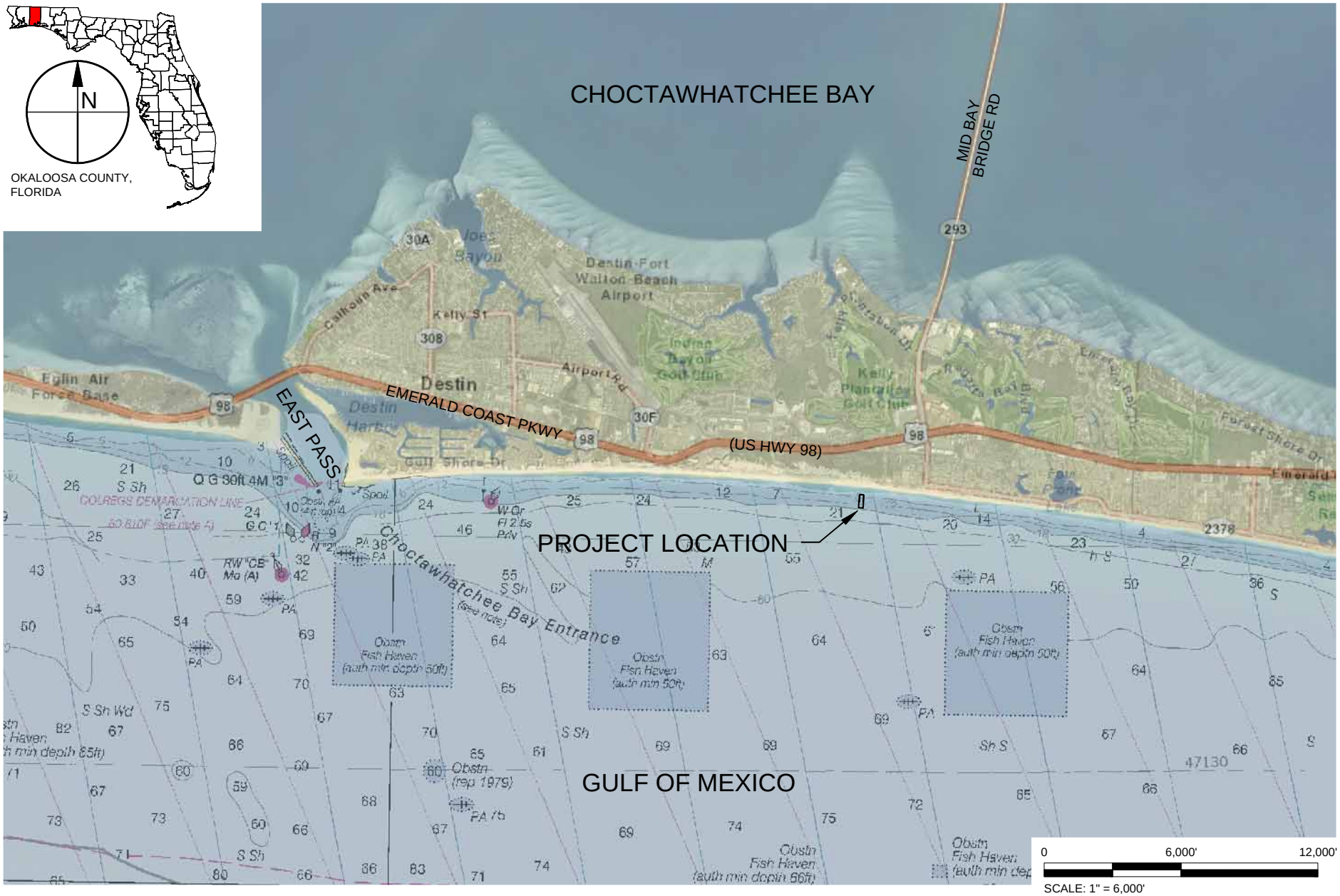


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FIGURE 1
LOCATION MAP
CRYSTAL BEACH REEF
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-017
DRAWN BY	AF
SHEET	1 of 6
DATE	MAR 2012

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MATTHEW TRAMMELL P.E.# 69244 DATE

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

ANTON FLEWELLING X:\SY\SP\PROJECTS\P2012-015 OKALOOSA CO SNORKEL REEF\PERMIT\P2012-015-P-LOCATION MAP.DWG 3/16/2012 1:51:17 PM

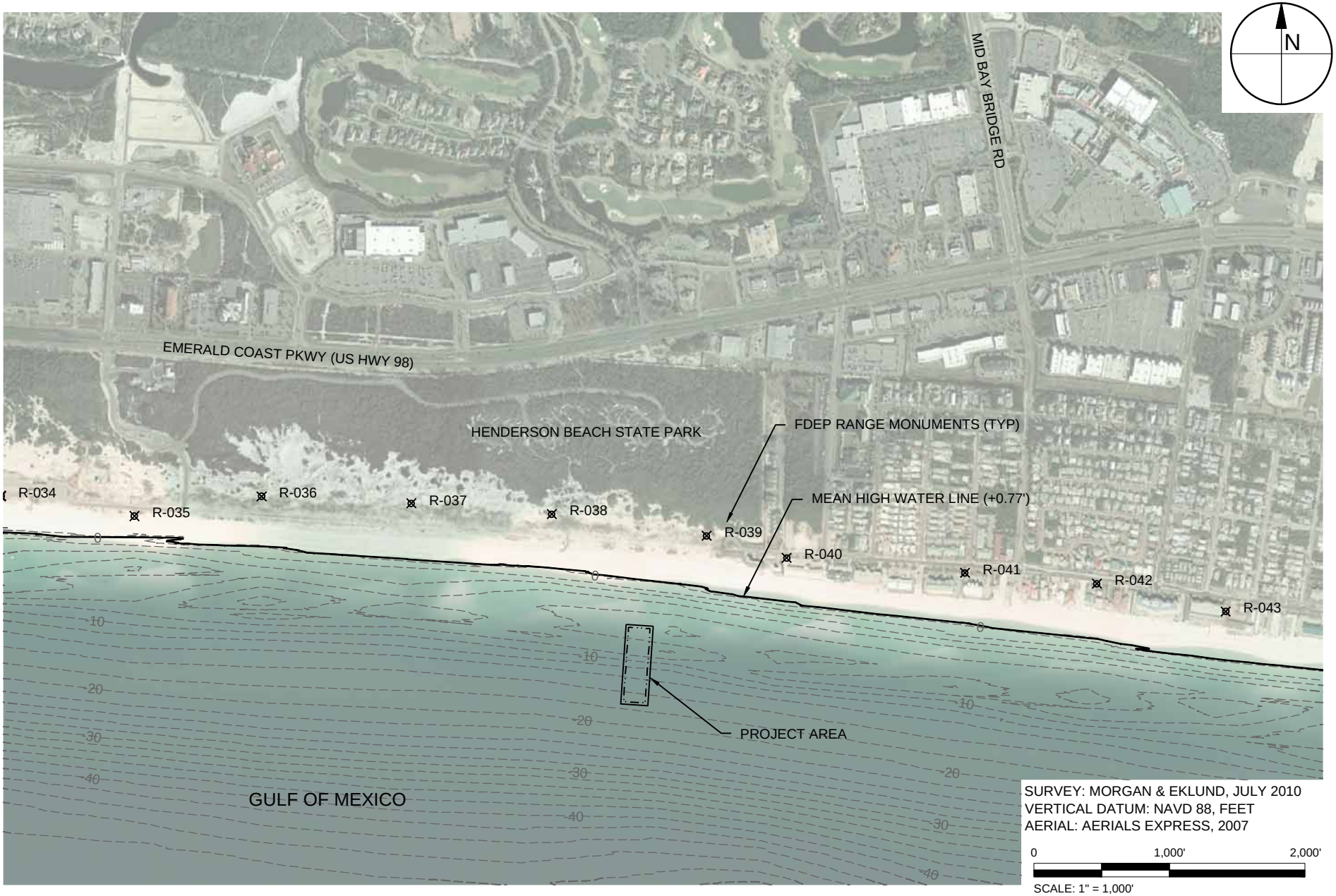

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FIGURE 2
PROJECT OVERVIEW
CRYSTAL BEACH REEF
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-017
DRAWN BY	AF
SHEET	2 of 6
DATE	MAR 2012

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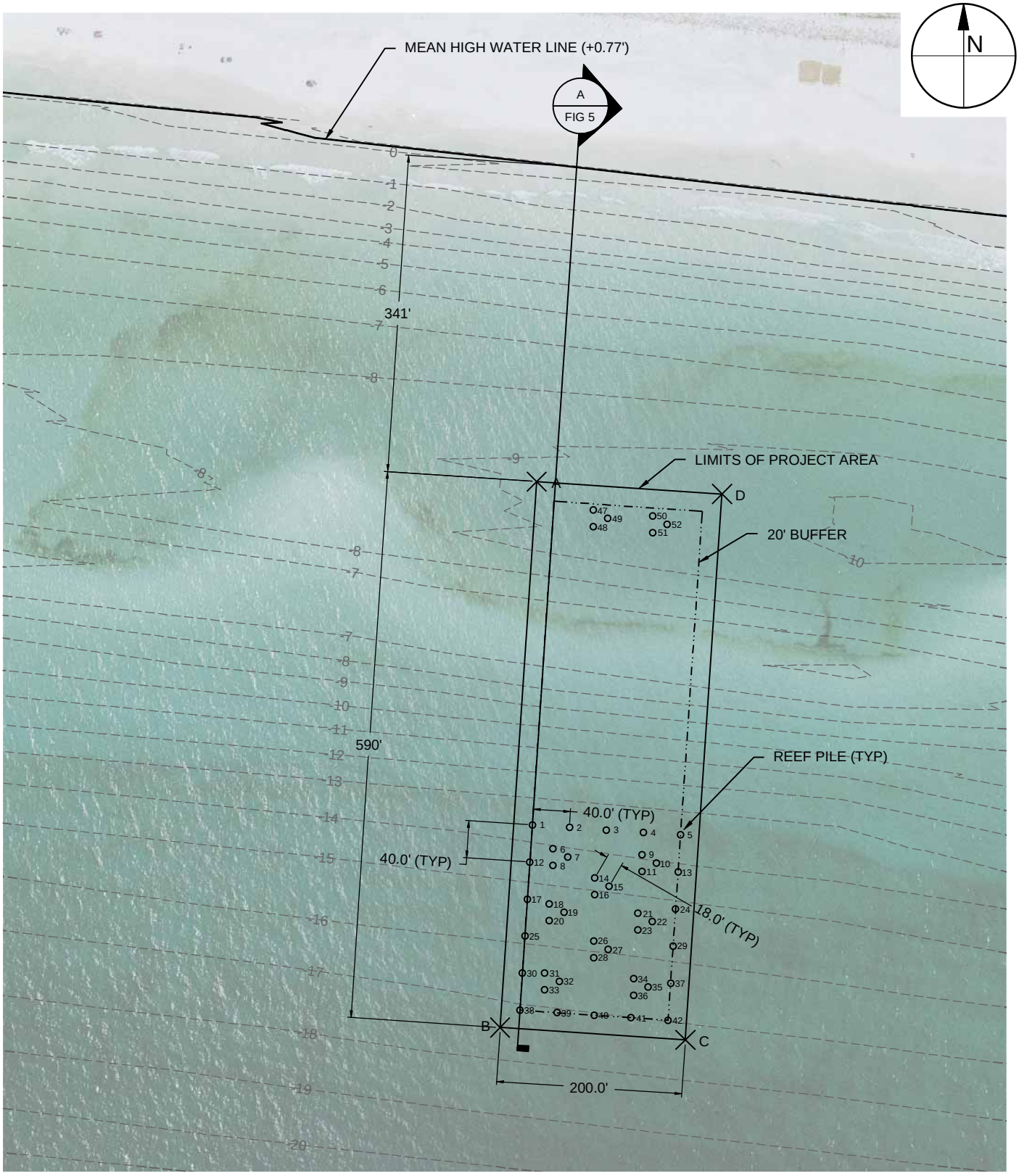
PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.



NOTES:
AERIAL: AERIAL CARTOGRAPHICS OF AMERICA, INC, 2010
SURVEY: MORGAN & EKLUND, JULY 2010
HORIZONTAL DATUM: NAD 83 STATE PLANE FLORIDA NORTH, FEET
VERTICAL DATUM: NAVD 88, FEET

0 150' 300'
SCALE: 1" = 150'

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FIGURE 3
REEF PLAN
CRYSTAL BEACH REEF
OKALOOSA COUNTY, FLORIDA

PROJECT	DRAWN BY	SHEET	DATE
C2012-017	AF	3 of 6	MAR 2012

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PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

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PROJECT AREA				
ID	LAT	LONG	LAT	LONG
	(DEC. DEGREES)		(DEG, DEC. MINUTES)	
A	30.3815	86.4353	30d 22.8909m	86d 26.1155m
B	30.3799	86.4354	30d 22.7938m	86d 26.1211m
C	30.3799	86.4347	30d 22.7922m	86d 26.0831m
D	30.3815	86.4346	30d 22.8893m	86d 26.0775m

REEF PILE TABLE				
ID	LAT	LONG	LAT	LONG
	(DEC. DEGREES)		(DEG, DEC. MINUTES)	
1	30.3805	86.4353	30d 22.8299m	86d 26.1152m
2	30.3805	86.4351	30d 22.8296m	86d 26.1076m
3	30.3805	86.4350	30d 22.8292m	86d 26.1m
4	30.3805	86.4349	30d 22.8289m	86d 26.0924m
5	30.3805	86.4347	30d 22.8286m	86d 26.0848m
6	30.3804	86.4352	30d 22.8257m	86d 26.1109m
7	30.3804	86.4351	30d 22.8243m	86d 26.1079m
8	30.3804	86.4352	30d 22.8228m	86d 26.1108m
9	30.3804	86.4349	30d 22.8249m	86d 26.0927m
10	30.3804	86.4348	30d 22.8235m	86d 26.0897m
11	30.3804	86.4349	30d 22.822m	86d 26.0926m
12	30.3804	86.4353	30d 22.8233m	86d 26.1156m
13	30.3804	86.4348	30d 22.822m	86d 26.0852m
14	30.3803	86.4350	30d 22.8207m	86d 26.1023m
15	30.3803	86.4350	30d 22.8192m	86d 26.0993m
16	30.3803	86.4350	30d 22.8177m	86d 26.1022m
17	30.3803	86.4353	30d 22.8167m	86d 26.116m
18	30.3803	86.4352	30d 22.8159m	86d 26.1115m
19	30.3802	86.4351	30d 22.8145m	86d 26.1085m
20	30.3802	86.4352	30d 22.8129m	86d 26.1114m
21	30.3802	86.4349	30d 22.8145m	86d 26.0933m
22	30.3802	86.4348	30d 22.8131m	86d 26.0903m
23	30.3802	86.4349	30d 22.8116m	86d 26.0933m
24	30.3803	86.4348	30d 22.8154m	86d 26.0856m

REEF PILE TABLE				
ID	LAT	LONG	LAT	LONG
	(DEC. DEGREES)		(DEG, DEC. MINUTES)	
25	30.3802	86.4353	30d 22.8101m	86d 26.1164m
26	30.3802	86.4350	30d 22.8095m	86d 26.1023m
27	30.3801	86.4350	30d 22.808m	86d 26.0993m
28	30.3801	86.4350	30d 22.8065m	86d 26.1022m
29	30.3801	86.4348	30d 22.8088m	86d 26.086m
30	30.3801	86.4353	30d 22.8035m	86d 26.1168m
31	30.3801	86.4352	30d 22.8037m	86d 26.1122m
32	30.3800	86.4352	30d 22.8022m	86d 26.1092m
33	30.3800	86.4352	30d 22.8007m	86d 26.1121m
34	30.3800	86.4349	30d 22.8029m	86d 26.094m
35	30.3800	86.4348	30d 22.8015m	86d 26.091m
36	30.3800	86.4349	30d 22.7999m	86d 26.0939m
37	30.3800	86.4348	30d 22.8022m	86d 26.0864m
38	30.3799	86.4353	30d 22.797m	86d 26.1171m
39	30.3799	86.4352	30d 22.7966m	86d 26.1095m
40	30.3799	86.4350	30d 22.7963m	86d 26.1019m
41	30.3799	86.4349	30d 22.796m	86d 26.0943m
42	30.3799	86.4348	30d 22.7956m	86d 26.0867m
47	30.3814	86.4351	30d 22.886m	86d 26.1039m
48	30.3814	86.4351	30d 22.883m	86d 26.1038m
49	30.3814	86.4350	30d 22.8846m	86d 26.1009m
50	30.3814	86.4349	30d 22.8852m	86d 26.0917m
51	30.3814	86.4349	30d 22.8822m	86d 26.0916m
52	30.3814	86.4348	30d 22.8837m	86d 26.0887m

NOTES:
HORIZONTAL DATUM: NAD 83 STATE PLANE FLORIDA NORTH, FEET
VERTICAL DATUM: NAVD 88, FEET
LAT/LONG: NAD 83 DATUM, DECIMAL DEGREES AND DEGREES/DECIMAL MINUTES

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FIGURE 4
PROJECT AREA AND REEF PILE TABLES
CRYSTAL BEACH REEF
OKALOOSA COUNTY, FLORIDA

PROJECT	DRAWN BY	SHEET	DATE
C2012-017	AF	4 of 6	MAR 2012

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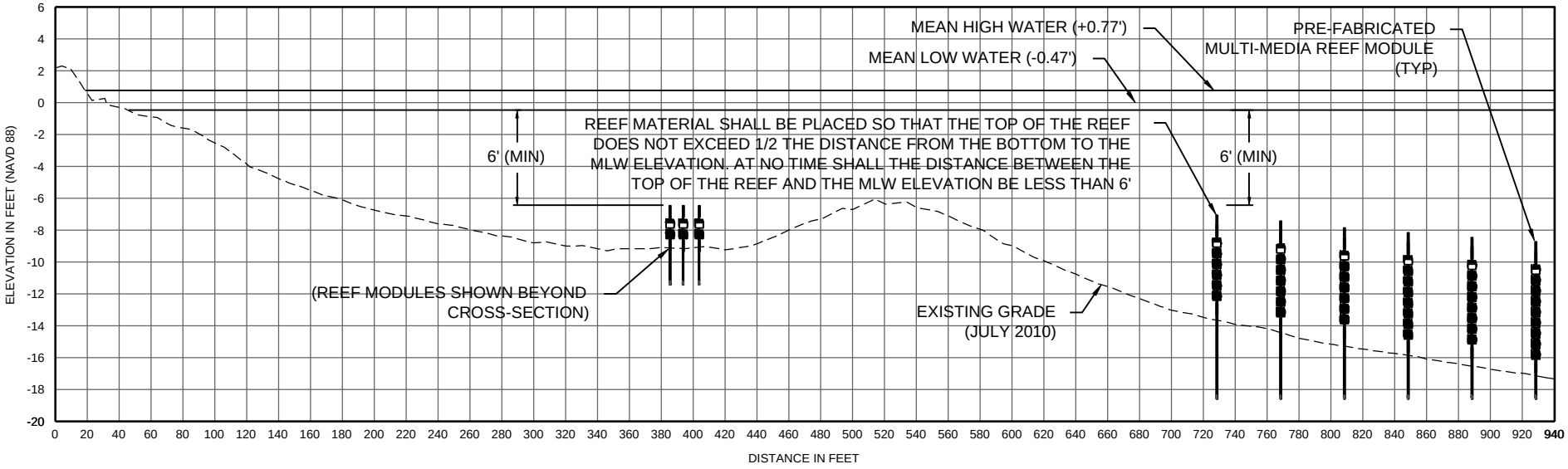

A
FIG 3

TYPICAL SECTION

SCALE: 1" = 100'
V-SCALE: 1" = 10'

0 100'

SURVEY: MORGAN & EKLUND, JULY 2010
VERTICAL DATUM: NAVD 88, FEET

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FIGURE 5
TYPICAL SECTION
CRYSTAL BEACH REEF
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-017
DRAWN BY	AF
SHEET	5 of 6
DATE	MAR 2012

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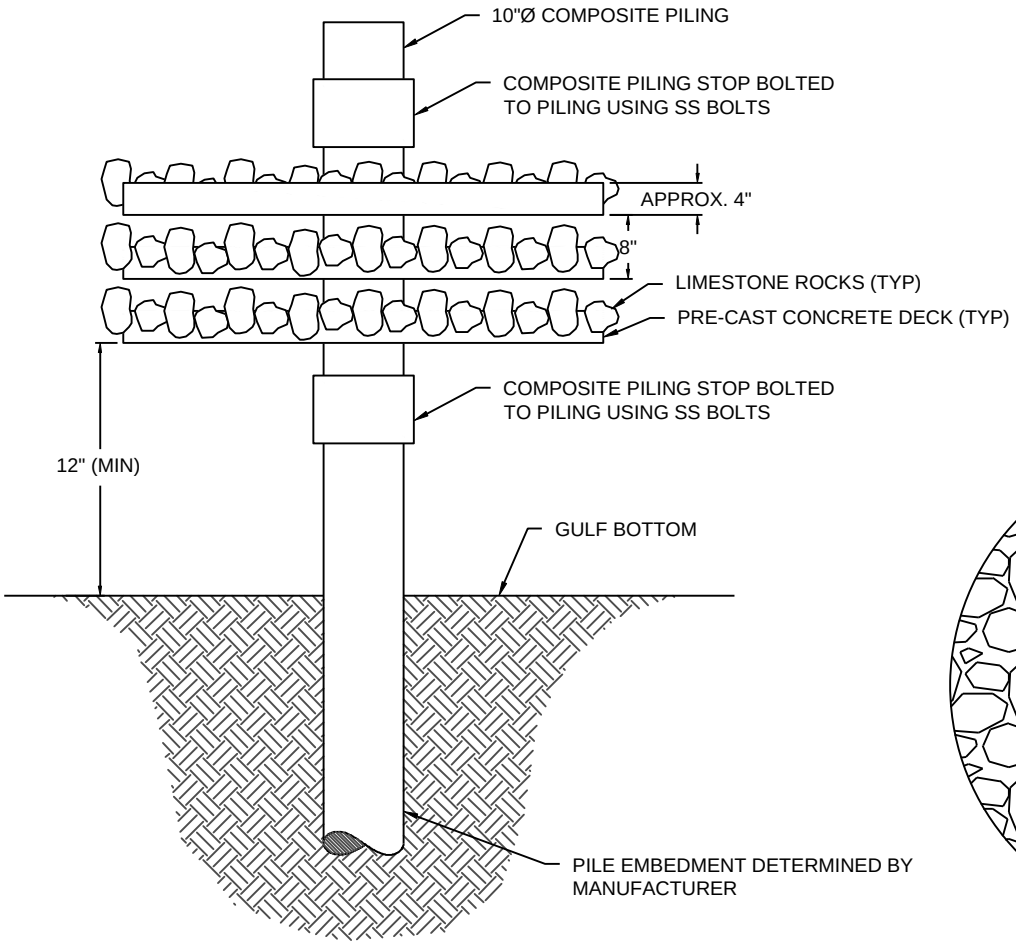
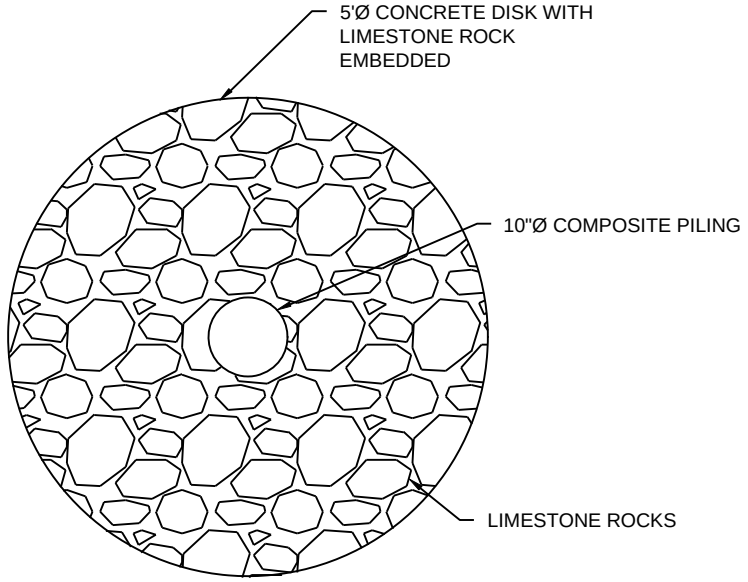


ELEVATION VIEW



TOP VIEW

PRE-FABRICATED MULTI-MEDIA REEF MODULE

NOT TO SCALE

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FIGURE 6
REEF DETAILS
CRYSTAL BEACH REEF
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-017
DRAWN BY	AF
SHEET	6 of 6
DATE	MAR 2012

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Attachment C

BIOLOGICAL ASSESSMENT

Crystal Beach Artificial Reef Location
Okaloosa County, Florida

Original Text created
For Santa Rosa County, Florida
Navarre Beach Park Gulf Snorkel Reef Site
By Wetland Sciences, Inc.
1829 Bainbridge Ave.
Pensacola, Florida 32501
August 7, 2009

Revised for Okaloosa County Crystal Beach Area
By: Scott R. Henson
Okaloosa County Artificial Reef Program Manager
84 Ready Avenue
Fort Walton Beach, Florida 32548

and

David L. Stites, Ph.D.
Taylor Engineering, Inc.
10151 Deerwood Park Blvd
Bldg. 300, Suite 300
Jacksonville FL 32256

March 2012

Table of Contents

1.0 Introduction

This Biological Assessment (BA) has been prepared to fulfill the U.S. Army Corps of Engineers (USACE) requirements as outlined under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. This BA evaluates the potential impacts that the proposed Okaloosa County Artificial Reef Deployment area Fish Haven 13 may have on federally listed endangered and threatened species, and describes the avoidance, minimization and conservation measures proposed by the applicant, Okaloosa County.

This BA is prepared pursuant to Section 7 of the Endangered Species Act (ESA) as well as the relevant implementing regulations and agency guidance. 16 U.S.C. § 1536; 50 C.F.R. § 402.12; and Final ESA Section 7 Consultation Handbook (March 1998) [Section 7 Handbook]. The primary purpose of the BA is to address potential impacts to threatened and endangered species and their designated critical habitats that may result from the Project. The primary objectives of this BA are to:

- Provide a conceptual framework of the history of the Project;
- Document the evolution of the project alternatives and past consultations with the United States Fish and Wildlife Services (USFWS), Corps, National Marine Fisheries Service (MNFS) and the Florida Fish and Wildlife Commission (FWC);
- Describe the Project, including the planned use and all proposed mitigation and conservation measures;
- Provide information on the natural history of federally-listed endangered or threatened species, species proposed for listing and other sensitive species potentially occurring in the vicinity of the Project;
- Evaluate the potential effects of the Project on federally-listed or proposed-listed endangered or threatened species; and
- Provide a determination of effect (i.e., “no effect”, “may affect, not likely to adversely affect, or modify critical habitat”, or “may affect, is likely to adversely affect, or modify critical habitat”) for the listed and proposed-listed species.

2.0 Project Description

The proposed Crystal Beach Artificial Reef locates in an 118,000 sq. ft (2.7 acre) rectangle defined by the following coordinates off of Henderson Beach State Park in Destin, FL (**Attachment B: Figure 1 and Figure 2**, attached). This location is approximately four miles from the east edge of East Pass, Destin,

Table 1. Outside Corners and Center of the Proposed Project Area

	Latitude - Longitude		Latitude- Longitude	
Corners	**Decimal Degrees**		**Decimal Minutes**	
Northwest	N30.3815	W86.4353	N30d 22.8909m	W86d 26.1155m
Southwest	N30.3799	W86.4354	N30d 22.7938m	W86d 26.1211m
Southeast	N30.3799	W86.4347	N30d 22.7922m	W86d 26.0831m
Northeast	N30.3815	W86.4346	N30d 22.8893m	W86d 26.0775m
Center	N30.3807	W86.4350	N30d 22.8415m	W86d 26.0993m

Okaloosa County intends to construct up to 52 separate artificial reefs in the project area (**Attachment B: Figure 3, Figure 4**) in depths ranging from about 9 to 16 ft below mean low water (**Attachment B: Figure 5**). Each reef will include a set of 5-ft diameter, 4" thick concrete disks imbedded with stone (modules), mounted on a 10 inch diameter fiberglass composite (or concrete) post. Piling mounts (spacers) are used to hold the bottom module off the sediment surface, provide spaces between the modules, and hold the topmost module onto the post. When constructed, the post will extend about a foot above the highest module (**Attachment B: Figure 6**). The contractor will jet the composite post into the substrate. Depending on the location depth, each post will hold between three to nine disks.

The artificial reefs will provide an easily accessible amenity for local swimmers, snorkelers, and others using Henderson Beach State Park. The reefs will provide a rare amenity of hardbottom habitat near to shore and available to those without boats or SCUBA equipment.

3.0 Project Area

The proposed reef construction area includes only unvegetated sand bottom that develops (and loses) a surficial layer of microalgae/cyanobacteria. Categories of affected Essential Fish Habitat within the project area include marine water column and unvegetated sand bottom. There are no seagrasses located within the vicinity of the deployment site. There are no natural rock outcrops or hard bottom formations within the proposed deployment site. There are no other nearshore artificial or natural reefs in Okaloosa County nearshore waters. Okaloosa County Artificial Reef Program Manager Scott Henson swam the Crystal Beach Artificial Reef site making periodic dives to assess the bottom conditions. He found only sand and occasional sand dollars, starfish, and pelagic fish species. Additionally, the region has no known rock outcrops, oyster reefs, or seagrasses within the Gulf of Mexico nearshore (shoreline) zone.

4.0 Alternatives Considered

Recent consultation with potential user groups has indicated that more near-shore reef areas are desirable. The Okaloosa County artificial Reef 5-year plan was also reviewed. Based on this input, the proposed location was selected. There are numerous other locations within the same radius from East Pass, Destin, Florida that are compatible with selection criteria. However, most of these sites are not associated with a public park and related amenities.

The proposed area was chosen to facilitate safe access and utilization. Factors considered included; shore proximity, vessel traffic patterns, ideal snorkeling depths, avoidance of permitted borrow and/or disposal

sites, avoidance of safety fairways, anchorages, designated shipping lanes, and avoidance of sensitive environmental resources (i.e. hard bottom formations, seagrasses, etc.).

The materials proposed for use at the Crystal Beach Artificial Reef have been successfully deployed at the Navarre Beach artificial reef site in nearby Escambia County. The materials specified are consistent with the National Artificial Reef Plan (As Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (U.S. Department of Commerce 2007).

4.1 No-Action Alternative

The objective of the proposed activity is to increase near shore fishing, snorkeling, and diving opportunities for residents of Okaloosa County. Currently there are only a few areas which offer such opportunities. To accept the No-Action Alternative would abandon the following Artificial Reef Program Goals:

- Enhance the seafloor of the marine and estuarine waters of, and adjacent to, Okaloosa County by the placement of stable and durable artificial reef materials for the purpose of establishing access and creating habitat for reef-associated species of fishes and invertebrates.
- Increase regional abundance of marine life.
- Reduce negative impacts to natural reefs.
- Provide snorkeling / diving opportunities for the residents and tourists of Okaloosa County
- Increase artificial reef-user satisfaction
- Enhance the local and state economies
- Increase safety of boaters using artificial reefs via establishment of artificial reef close to shore
- Increase fuel economy (decrease fuel consumption) via establishment of artificial reef permits close to shore

The No-Action Alternative does not meet the stated objective for the proposed nearshore reef deployment sites.

4.2 Preferred Alternative – Establishment of a Gulf Snorkel Reef Site

The preferred alternative is described in the project description section of this document. The reef deployment location was selected based upon many factors, including: proximity to shore for swimmers and to safe harbor for boaters.

4.2.1 Pre-Deployment Procedures

No less than 5 days prior to deployment of material within the Crystal Beach Artificial Reef area, the Permittee shall transmit by electronic mail (“e-mail”) a complete and signed “Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification” form to the Corps and FWC to allow inspection of the proposed reef materials. Inspections will be held at the staging area. By signing the Pre-Deployment Notification, the Permittee certifies that all materials are free from asphalt, petroleum, other hydrocarbons and toxic residues. The Permittee will take digital photos of representative components/piers of reef material and transmit with the above form as PDF attachments to the appropriate agencies. Permittee will ensure receipt of transmittals to appropriate agencies. The Permittee will not deploy material if notified by the Corps or FWC that the material is questionable or unacceptable until the material has been evaluated and released for deployment.

Deployment of the material shall not occur until the end of the inspection period. The Permittee will ensure both a copy of the Corps and DEP permit and the signed "Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification form" are maintained aboard the deployment vessel at all times during loading, transit, and deployment.

4.2.2 Deployment Procedures

Prior to construction, the contractor will mark project area corners and midpoints of perimeter boundary lines using minimum 18-inch diameter high-visibility buoys. The buoys will serve as reference points throughout the construction process. The buoys will be temporarily anchored to the seafloor by weight or a screw type anchor that has proven reliable for local wave conditions. Buoys will be secured to the anchors with cabling to discourage tampering. Each buoy will include clear markings and other indications of purpose and ownership. Buoy locations will be verified daily by the contractor.

Global Positioning System (GPS) instruments will provide the locations of construction area corners and other project features. GPS used on the project will be compliant with State Plane coordinates, North American Datum of 1983 (NAD83), Adjustment of 2007 (NSR2007), Florida North Zone, Lambert Conformal Conical Map Projection. All documentation produced from the project will conform to this specification unless otherwise specified by regulatory agencies.

Once the contractor has located and marked the project area, the firm will use barges as the platform for carrying the materials and equipment necessary to construct the individual reef systems and to construct each reef. The construction barge will have spuds (or similar anchoring system) that when lowered from the barge to the seafloor will hold the barge in place during construction. Placement of each reef post will follow a geometric pattern (**Attachment B: Figure 3** – Crystal Beach Reef Plan) at the locations listed in **Attachment B: Figure 4, Reef Location Data)**. Reef locations may change slightly based on site specific conditions (depths at particular locations) found when construction begins. This is especially relevant to the six reefs intended to be placed in the trough between the shoreline and the shallow sandbar typical of Okaloosa County beaches located from 150 to 300 feet from the shoreline. Okaloosa County recognizes that that the trough transports large quantities of sand and that reefs installed in this location are susceptible to be covered with sand periodically. While this condition may occur from time to time, lateral flow currents through the trough will quickly transport sand off of the structures.

Jet pumps are the main power source to insert the posts to the desired depth. The desired depths of each post will depend on site specific conditions encountered during construction (**Attachment B: Figure 4 – Crystal Beach Reef Cross Section, Figure 6 Reef Details**). The height of each post will also be dependent on site specific conditions. Two design criteria will be respected regardless of site specific conditions; reef material will be placed so that the top of the reef does not exceed one-half the distance from the bottom to the mean low water level elevation and at no time will the distance between the top of the reef and the mean low water level elevation be less than 6-feet.

Within 30 days of reef construction project completion (final contractor invoice reviewed and accepted), the Permittee shall transmit by email to the Corps and FWC a complete and signed "*Florida Artificial Reef Materials Placement Report and Post-Deployment Notification"* form. A short report with representative photographs will accompany the completed notification form. The report will include a construction narrative recording the construction period, any differences between the permit application

plans and the completed construction, and the latitude and longitude of constructed reef modules accurate to within 3 meters horizontal distance. If different from the permit application drawings, as-built drawing will identify approximate deployment configurations and the height of the material (off the bottom) after placement. Depth at the placement locations shall be verified utilizing fathometer, depth sounder, or similar device accurate to within 1 meter. The report and drawing shall be limited to a few pages per deployment. Representative photographs will complete the report.

4.2.3 Deployment Monitoring

The Permittee or the permittee representative (not a member of the contractor's crew) shall make an inspection during deployment to verify compliance with the permit and its conditions. The permittee or representative will verify geographic coordinates using a Differentially Corrected Global Positioning System (DGPS) accurate to within 3 meters horizontal distance. Depth shall be verified utilizing fathometer, depth sounder, or similar device accurate to within 1 meter.

4.2.4 Post Deployment Monitoring

Within 12 months from the effective date of this permit the Permittee shall submit to the Corps and FWC a spreadsheet a written report which summarizes, analyses, and draws conclusions regarding the activities or issues associated with the reef in the past twelve months. The spreadsheet will include the local tracking number, date deployed, geographic coordinates, description, and quantity of the material deployed, depth of water above material, approximate area of seafloor covered. The spreadsheet will document any known changes in material condition (stability, durability, and location) as compared to those same characteristics at time of deployment. The report may include but is not limited to use trends, site management constraints and resolutions, management techniques, modifications of operations plans, lessons learned, etc. Results of any performance monitoring (description of fish and other biota observed) will be included in the report. The report will document any known changes in material stability, durability, as well as a summary/analysis of the qualitative data (trends, lessons learned, etc.) in the yearly reports.

5.0 Status of Listed Species and Habitat

While numerous state and federally listed species potentially occur in Okaloosa County, Florida, the table below provides a listed species that may be potentially affected by the proposed project.

Table 2. Listed Species Potentially Affected by the Proposed Project

Listed Species	Scientific Name	Status
Marine Mammals		
West Indian manatee	*Trichechus manatus*	Endangered
Sea Turtles		
Green sea turtle	*Chelonia mydas*	Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened
Fish		
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened

Five, federally-protected, endangered whales species are of potential occurrence in the Gulf of Mexico: blue whale (*Balaenoptera musculus*), finback whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). These five whale species are not considered in this BA as these whales are generally restricted to offshore waters, and therefore unlikely to be found in or near the project area.

One federally-protected, endangered ray is of potential occurrence in the Gulf of Mexico: smalltooth sawfish *(Pristis pectinata*). Smalltooth sawfish were once prevalent throughout Florida and were commonly encountered from Texas to North Carolina. Currently, smalltooth sawfish can be only found with any regularity in south Florida between the Caloosahatcheee River and the Florida Keys (NMFS 2006). Therefore, this species would not likely occur in or near the project area and for that reason is not further considered in this BA.

5.1 Loggerhead Sea Turtle

5.1.1 Status and Threats

The loggerhead turtle (*Caretta caretta*) was listed as threatened throughout its range on July 28, 1978 (43 FR 32808). The loggerhead is the most abundant sea turtle species in U.S. coastal waters (NMFS and USFWS 1991a).

Genetic research has identified four different loggerhead nesting subpopulations in the southeastern United States: (1) the Northern Subpopulation ranging from North Carolina to Northeast Florida; (2) South Florida Subpopulation ranging from just north of Cape Canaveral, Florida and extending to Sarasota, Florida; (3) Dry Tortugas, Florida Subpopulation; and (4) Northwest Florida Subpopulation on the beaches of Florida's Panhandle (Bowen et al. 1993, Bowen et al. 1994, Bowen 1995, Encalada et al. 1998, Pearce 2001). Each nesting subpopulation is considered a distinct reproductive population. Due to the high site fidelity of nesting females to their natal region and low gene flow among nesting assemblages, most western North Atlantic loggerhead nesting assemblages are vulnerable to extirpation.

Based upon nesting data collected on index nesting beaches in the U.S. from 1989-1998, the total number of loggerhead nests laid along the Atlantic and Gulf Coasts ranged from 53,016 nests to 89,034 nests annually. On average 0.8% of the nests were from the Florida Panhandle subpopulation.

The most significant threats to the loggerhead sea turtle population are coastal development, commercial fisheries and marine pollution (NMFS 2007a). Juvenile loggerhead turtles are particularly susceptible to impacts associated with shrimp fisheries offshore of the Atlantic coast and along the southeastern Atlantic coast. Shrimp harvesting is managed in the Gulf of Mexico: waters out to 200 nautical miles are closed annually for 3 months to shrimp fishing offshore of Texas (mid May through mid July) to allow shrimp to migrate out of estuarine waters. The management of shrimp harvesting in the Gulf appears to contribute to the reduction of sea turtle stranding during this period (NMFS unpublished data).

Loggerhead nesting habitat is threatened with beach erosion, armoring and nourishment; artificial lighting; increased human activity associated with coastal development, including poaching activities; natural predation by fire ants, raccoons, armadillos, and opossums; and storm activity. Negative impacts to sea turtle nesting and hatching success in Okaloosa County include predation, hatchling disorientation

due to artificial upland lighting, human activity/disturbance, and lost or damaged nests due to storm activity.

5.1.2 Distribution and Range

Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Gulf of Mexico, Pacific and Indian Oceans. The loggerhead occurs in open water as far as 500 miles from shore, but is mainly found over the continental shelf and in bays, estuaries, lagoons, creeks, and mouths of rivers. The loggerhead favors warm temperate and subtropical regions in relatively close proximity to shorelines. Similar to other sea turtles species, water temperature influences the movements of loggerhead, and they do not usually appear at summer foraging grounds until June, although some individuals can be found in Virginia as early as April. Immature stages of loggerheads (juveniles/sub-adults) which forage in the northeastern U.S. are known to migrate southward in the fall as water temperatures drop, and migrate northward in spring.

5.1.3 Habitat

Loggerheads are primarily carnivorous, feeding on sponges, squid, sea urchins, crabs, horseshoe crabs, shrimp, basket starfish and a variety of mollusks. Loggerhead turtles are primarily bottom feeders; however they also feed on jellyfish while swimming in the water column or resting/basking near the surface of the water. Under certain conditions, they may prey upon slow moving, demersal fish species. Hatchlings and juveniles feed on prey concentrated at the surface such as gastropods and *Sargassum*. Along the Gulf Coast, loggerhead sea turtles are frequently observed near offshore oil platforms, natural hardbottom/reefs and rock jetties.

Adult loggerheads occupy various habitats from turbid bays to clear waters of reef. After emergence from the nest, hatchlings move out to sea, and spend approximately 3 to 5 years in the pelagic immature stage, generally associated with floating *Sargassum* mats (NMFS and USFWS 1991a). The pelagic stage may span as long as 7 to 12 years. Juveniles and sub-adults occur mainly in nearshore and estuarine waters and use these habitats for feeding. As loggerheads mature, they travel and forage through nearshore waters until their breeding season, when they return to the nesting beach. The estimated age at maturity is approximately 21 to 35 years (Frazer and Ehrhart 1985; Frazer et al. 1994). The majority of mature loggerheads appear to nest on a two or three year cycle.

Major nesting beaches for loggerheads include the Sultanate of Oman, southeastern United States and eastern Australia. In the continental U.S., loggerhead sea turtles nest along the Atlantic coast from Florida to New Jersey (Musick 1979). In the western Atlantic, most loggerhead nesting occurs from North Carolina to Florida and the Gulf Coast. The southeastern nesting population is critical to the survival of the species and is second in size only to the nesting aggregation on Masirah Island, Oman. Steeply sloped beaches with gradually slopes offshore approaches are generally favored by nesting females. Approximately 80% of all loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties)

5.1.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. The loggerhead is responsible for the majority of nesting in Okaloosa County.

5.2 Green Sea Turtle

5.2.1 Status and Threats

The green sea turtle (*Chelonia mydas*) was listing on July 28, 1978 as threatened, except for Florida and the Pacific Coast of Mexico(including the Gulf of California), where it was listed as endangered (43FR 32808). The greatest cause of the worldwide decline in green turtle populations is the commercial harvest for eggs and meat. In Florida, the nesting population was nearly extirpated within 100 years of the initiation of commercial exploitation.

Green sea turtle population in Florida, Hawaii and other parts of the world have experienced significant mortality from the disease, fibropapillomatosis, which is a disease characterized by the development of multiple tumors on the skin and internal organs. The tumors can interfere with swimming, eating, breathing, vision and reproduction. Other threats to green sea turtles include loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by fire ants, raccoons and opossums; degradation of foraging habitat; marine pollution and debris; watercraft strike; and incidental take from commercial fishing operations such as shrimp trawling.

Due to their main dietary component of seagrass, Caribbean green sea turtles are considered to be nutrient limited, resulting in low growth rates, delayed sexual maturity, and low annual reproductive effort. This low reproductive effort makes recovery of the species slow once the adult population number have been severely reduced (Bjorndal 1981). Estimates of age at sexually maturity range from 20 to 50 years (Balazs 1982; Frazer and Ehrhart 1985) and the lifespan may be over 100 years.

5.2.2 Distribution and Range

The green sea turtle is a circumglobal species in tropical and subtropical waters. In the U.S. Atlantic waters, it occurs around the U.S. Virgin Islands, Puerto Rico, and the continental U.S. from Massachusetts to Texas. Relatively small numbers nest in Florida with even smaller numbers in Georgia, North Carolina and Texas (NMFS and USFWS 1991b; Hirth 1997). Green turtles are distributed more widely in the summer when warmer temperatures allow them to migrate north along the Atlantic Coast. Juvenile and sub-adult green sea turtles can be found in estuarine and coastal waters from Long Island Sound, Chesapeake Bay and North Carolina sounds south throughout the tropics (Musick and Limpus 1997). As the water temperatures decline during the winter months, green sea turtles that are found north of Florida migrate south into subtropical and tropical water.

Major nesting areas for green sea turtles in the Atlantic include Surinam, Guyana, French Guyana, Costa Rica, the Leeward Islands and Ascension Island in the mid-Atlantic. Historically in the U.S., green turtles have been known to nest in the Florida Keys and Dry Tortugas. Green sea turtles primarily nest on selected beaches along the coast of eastern Florida, predominantly Brevard through Broward Counties. In the southeastern U.S., the majority of nesting occurs during the months of June, July and August.

5.2.3 Habitat

The green turtle primarily utilizes shallow habitats such as lagoons, bays, inlets, shoals, estuaries and other areas with abundance for marine algae and seagrasses. Individuals observed in the open ocean are believed to be migrating to feeding grounds or nesting beaches (Meylan 1982). Hatchlings often float in

masses of algae (*Sargassum* spp) in convergence zones. Coral reefs and rock outcrops are often used as resting areas.

Green sea turtle hatchlings are believed to feed mainly on jellyfish and other invertebrates. Adult green sea turtles prefer an herbivorous diet frequenting shallow water flats for feeding (Fritts et al. 1983). Adult turtles feed primarily in seagrasses such as *Thalassia testudinum*. This vegetation provides the turtles with a high fiber content and low forage quality (Bjorndal 1981). Green turtles migrate long distances between feeding and nesting areas (Carr and Hirth 1962). Nocturnal resting sites may be a considerable distance from feeding areas and distribution of the species is generally correlated with grassbed distribution, location of resting beaches and possibly ocean currents (Hirth 1971). In the Gulf of Mexico, principal foraging areas are located in the upper west coast of Florida. Green sea turtle hatchlings are believed to feed mainly in jellyfish and other invertebrates.

Nesting occurs nocturnally at 2, 3 or 4 year intervals and females only occasionally produce clutches in successive year. Little is known about the pelagic distribution of hatchlings to juvenile size. When juveniles reach a carapace length of approximately 20 to 25 cm, they leave their pelagic habitats and enter benthic foraging areas, shifting to an herbivorous diet.

5.2.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

Green sea turtle nesting is known to occur on Henderson Beach State Park. Since the green sea turtle may likely occur in the project area, the applicant will comply with "*Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region*" (**Attachment D**) and National Marine Fisheries Service's "*Sea Turtle and Smalltooth Sawfish Construction Conditions*" (**Attachment E**).

The project is not anticipated to affect green sea turtle foraging areas or critical habitat. Therefore, the project will not likely have an adverse effect on the green sea turtle.

5.3 Kemp's Ridley Sea Turtle

5.3.1 Status and Threats

Kemp's ridley sea turtle (*Lepidochelys kempii*) was listed as endangered throughout its range on December 2, 1970 (35 FR 18320). Of the seven extant species of sea turtles, the Kemp's ridley has declined to the lowest population level. Recent studies suggest increased nesting activities and an overall increase in population size due to increased hatchling production and survival rates of immature turtles (USFWS 2000). Kemp's ridley turtles have been subject to high levels of incidental take by shrimp trawlers (USFWS and NMFS 1992). In 1990, the National Research Council's Committee on Sea Turtle Conservation estimated that 86% of human caused death of juvenile and adult loggerhead and Kemp's ridley resulted from shrimp trawling (Campbell 1995). The recent increased survival of juvenile and sub-adult individuals is partly attributed to the use of turtle exclusion devices (TEDs) in commercial shrimping fleets.

The primary decline of Kemp's ridley is due to human activities including collection of eggs, fishing for juveniles and adults and direct take for indigenous use. Dredging operations affect Kemp's ridley turtles through incidental take and degradation of habitat. Incidental take of Kemp's ridley has been documented with hopper dredging. Similar to other sea turtles species, future threats to the Kemps' ridley include interaction with fishery gear; marine pollution which results in the ingestion of manmade debris and garbage; destruction of foraging habitat; illegal poaching; and impacts to nesting beaches associated with rising sea level, development, artificial lighting and tourism pressure.

5.3.2 Distribution and Range

Adults are primarily restricted to the Gulf of Mexico, although juveniles may range throughout the Atlantic Ocean since they have been observed as far north as Nova Scotia (Musick 1979). Important foraging areas include Campeche Bay, Mexico and Louisiana coastal waters. Nearly the entire population of Kemp's ridley turtles nests on an 11 mile stretch of coastline near Ranch Nuevo, Tamaulipas, Mexico, approximately 190 miles south of the Rio Grande. A second nesting aggregation occurs at Tuxpan, Veracruz.

Juveniles and sub-adults have been found along the eastern seaboard of the U.S. and in the Gulf of Mexico. Studies suggest that the benthic stage, juvenile turtles stay in shallow, warm nearshore waters in the northern Gulf until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known about the movements of the post hatchling, pelagic stage within the Gulf. Studies have indicated that this stage varies from 1 to 4 or more years and the immature stage lasts about 7 to 9 years. The maturity age of this species is estimated to 7 to 15 years. Females return to their nesting beach approximately every other year with nesting from April into July and usually limited to the western Gulf of Mexico. The mean clutch size for this species is about 100 eggs per nest and an average of 2.5 nests per female per season.

5.3.3 Habitat

Kemp's ridley turtles inhabit shallow coastal and estuarine waters, usually over sand of mud bottoms. Adults are primarily shallow water benthic feeders that specialize on crabs, especially portunid crabs, while juveniles feed on *Sargassum* sp. and associated infauna and other epipelagic species of the Gulf (USFWS and MNFS 1992). Other food items include shrimp, snails, bivalves, sea urchin, jellyfish, sea stars, fish and occasionally marine plants (Pritchard and Marquez 1973; Shaver 1991; Campbell 1995).

5.3.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

No Kemp's ridley sea turtles or nests have been observed. However, since the Kemp's ridley sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in **Attachment D and Attachment E**.

The project is not anticipated to affect Kemp's ridley sea turtle foraging areas or critical habitat therefore with use of the demolition conditions the project will not likely have an adverse effect on the Kemp's ridley sea turtle.

5.4 Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*) was listed as endangered throughout its range on June 2, 1970 (35 FR 8495), with critical habitat designated in the U.S. Virgin Islands on September 26, 1978 and March 23, 1979 (43 FR 43688-43689 and 44 FR 17710-17712, respectively).

The general decline of the leatherback sea turtle is attributed to exploitation of eggs (Ross 1981). The population has been threatened by egg harvesting in countries such as Malaysia, Surinam, the Guianas, the west coast of Mexico, Costa Rica and in several Caribbean Islands. In the past, leatherbacks were killed for their abundant oil, which was used for oil lamps and for caulking wooden boats. Similar to other sea turtle species, ingestion of manmade debris, such as plastic bags and other plastic waste, is a significant cause of mortality in leatherback turtles.

Leatherbacks prefer open access beaches possibly to avoid damage to their soft plastron and flippers. Unfortunately, open beaches with little shoreline protection are vulnerable to beach erosion triggered by seasonal changes in wind and wave direction. Nests are more susceptible to inundation on open beaches during severe erosion events.

5.4.2 Distribution and Range

The leatherback, the largest of all sea turtles, is mainly pelagic, inhabiting the open ocean and diving nearly continuously to great depths. Leatherbacks seldom approach land except for nesting (Eckert 1992). The leatherback is probably the most wide ranging of all sea turtle species, occurring in the Atlantic, Pacific and Indian oceans; as far north as British Columbia, Newfoundland, Great Britain and Norway; as far south as Australia, Cape of Good Hope, and Argentina; and in other water bodies such as the Mediterranean Sea (NFWL 1980). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al. 1983).

5.4.3 Habitat

Leatherback sea turtles are omnivorous. Leatherbacks feed mainly on pelagic soft bodied invertebrates such as jellyfish and tunicates. Their diet may include squid, fish, crustaceans, algae and floating seaweed. Highest concentrations of these prey animals are often found in upwelling areas or where ocean currents converge. They will also ingest plastic bags and other plastic debris, which are commonly generated by oil drilling rigs and production platforms in coastal Florida, Alabama, Mississippi and Louisiana (Fritts et al. 1983).

Leatherbacks nest primarily in tropical regions. Major nesting beaches include Malaysia, Mexico, French Guiana, Surinam, Costa Rica and Trinidad (Ross 1981). Leatherbacks nest only sporadically in some of the Atlantic and Gulf states of the continental U.S., with one nesting reported as far north as North Carolina (Schwartz 1976). In the Atlantic and Caribbean, the largest nesting assemblages occur in the U.S. Virgin Islands, Puerto Rico and Florida (NMFS 2007a). During the summer, leatherbacks tend to occur along the east coast of the U.S. from the Gulf of Maine to the middle of Florida.

5.4.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no leatherback sea turtles or nests have been observed. Since the leatherback sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures" guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in **Attachment D** and **Attachment E**.

The project is not anticipated to affect leatherback sea turtle foraging areas or critical habitat therefore with use of the demolition conditions the project will not likely have an adverse effect on the leatherback sea turtle.

5.5 Hawksbill Sea Turtle

5.5.1 Status and Threats

The hawksbill sea turtle (*Eretmochelys imbricata*) was federally listed as endangered on June 2, 1970 (35 FR 8495) with critical habitat designated in Puerto Rico on May 24, 1978 (43 FR 22224). In 1998, NMFS designated critical habitat near Isla Monito, Puerto Rico, seaward to 5.6 km (63 FR 46693-46701).

The greatest threat to this species is from the harvest of the hawksbill shell for jewelry. Between 1970 and 1989, Japanese imports of hawksbill shell totaled 713, 850 kg, representing more than 670,000 turtles. The hawksbill is also used in the manufacture of leather, oil, perfume and cosmetics (NMFS 2007a).

Other threats to the hawksbill sea turtles include destruction of nesting locations by beach development, incidental take in fishery operations, pollution by petroleum products, entanglement in marine debris (Meylan 1992), and predation on eggs and hatchlings. In America Samoa, villagers harvest sea turtle eggs when encountered (Tuato-o-Bartley et al. 1993).

5.5.2 Distribution and Range

The hawksbill is circum- tropical, occurring in tropical and subtropical seas of the Atlantic, Pacific and Indian Oceans (Witzell 1983). This species is probably the most tropical of all marine turtles, although it does occur in many temperate regions. The hawksbill sea turtle is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf (especially Texas), south to brazil (NMFS 2007a). In the continental U.S., the hawksbill largely nests in Florida where it is sporadic at best (NFWL 1980). However, a major nesting beach exists on Mona Island, Puerto Rico. Elsewhere in the western Atlantic, hawksbills nest in small numbers along the Gulf Coast of Mexico, the West Indies and the Caribbean coasts of Central and South America (Musick 1979).

5.5.3 Habitat

Hawksbills generally inhabit coastal reefs, bays, rocky area, passes, estuaries and lagoons, in water depths of less than 70 feet. Similar to green sea turtles, hatchlings are sometimes found floating in masses of pelagic marine algae (*Spargassum* sp.) (NFWL 1980). When they reach a carapace length of approximately 20 to 25 centimeters, hawksbill juveniles reenter coastal waters. Coral reefs are widely

recognized as the resident foraging habitat of juveniles, sub-adults and adults. This habitat associates is likely related to their diet of sponges, which need solid substrate for attachment. Hawksbills are omnivorous and prefer invertebrates, especially encrusting organisms, and will feed on plant material such as algae, seagrasses and mangroves (Carr 1952; Rebel 1974; Pritchard 1977; Musick 1979; Mortimer 1982). Hawksbills also occur around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth.

5.5.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

No documented records of hawksbills exist from Okaloosa County, Florida; however. This species is of potential occurrence within the offshore areas of the northwest Gulf of Mexico. Within the vicinity of the project area, no hawksbill sea turtles or nests have been observed. Since the hawksbill sea turtle may occur in the project area the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in **Attachments E** and **E.**

The project is not anticipated to affect hawksbill sea turtle foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse effect on the hawksbill sea turtle.

5.6 Gulf Sturgeon

5.6.1 Status and Threats

The USFWS and NMFS listed the Gulf Sturgeon (*Acipenser oxyrhinchus desotoi*) a subspecies of the Atlantic sturgeon (*A. oxyrhinchus*), as endangered on September 30, 1991 (56 FR 49653 49658). As with other sturgeon species, the damming of rivers has been the most significant threat to the Gulf sturgeon (NMFS 2007b). Other threats to the species include over exploitation, incidental catch, dredging activities, the removal of snags and dredged material placement associated with channel improvements and maintenance (USFWS and Gulf States Marine Fisheries Commission [GSMFC] 1995; NMFS 2007b).

5.6.2 Distribution and Range

The gulf surgeon is anadromous, which means the species breeds in freshwater environments, but spends the remainder of the year in marine and estuarine environments. Spawning occurs in the deeper portions of rivers on clean rock or rubble bottoms. Mud and sand bottoms and seagrass communities are likely important marine habitats (USFWS and GSMFC 1995). The Gulf sturgeon lives in riverine systems during the warmer months of the year and during the remaining months (November through March), the Gulf sturgeon migrates to estuarine or Gulf of Mexico waters to feed. In early to late spring, the fish migrate to the riverine systems to spawn.

The Gulf Sturgeon historically ranged along the northeastern Gulf, in major rivers from the Mississippi delta in Louisiana, east to Charlotte Harbor, Florida, and in marine waters of the central and eastern Gulf (USFWS and GSMFC 1995; NMFS 2007b). Its current range extends from Lake Pontchatrain and the Pearl River in Louisiana and Mississippi east to the Suwannee River in Florida. There are sporadic reports

from as far west as the Rio Grande River between Texas and Mexico, and as far east and south as Florida Bay. Viable populations exist in the Mississippi, Pearl, Escambia, Yellow, Choctawhatchee, Apalachicola, and Suwannee rivers (NMFS 2007b).

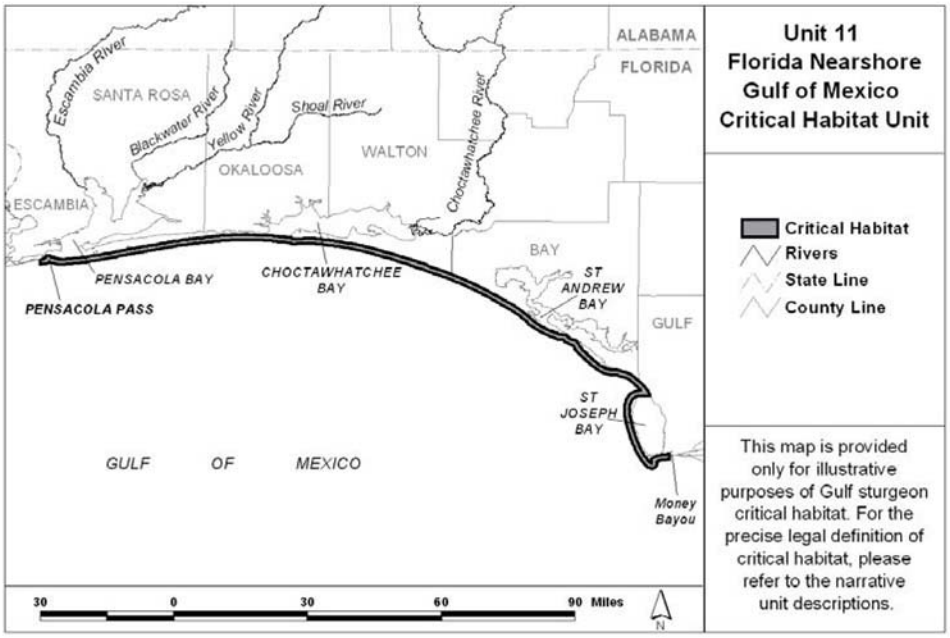
5.6.3 Habitat

The movement and behavior of the Gulf sturgeon is discussed in the Gulf Sturgeon Recovery/Management Plan produced by the USWS, GSMFC and NMFS (1995). Unpublished information from NMFS and USFWS personnel and other suggest that, while in the Gulf of Mexico during the winter months, the Gulf sturgeon may spend a portion of time feeding in relatively shallow water in the nearshore (<30ft.). However, there are some anecdotal reports of Gulf sturgeon as much as twelve mile offshore (Olsen Associates, Inc. 2002). The primary migratory pathway of Gulf sturgeon is parallel to the shoreline in the nearshore area.

A priority action item identified in the Gulf Sturgeon Recovery/Management Plan was the identification of Gulf sturgeon estuarine and marine habitat use. During the Gulf Sturgeon Marine Movement and Habitat Use Study, researchers collected and analyzed data through the capture, tagging, release and subsequent recapture of these species. Data collected from several years of research suggest that the fish near Panama City Beach are usually found to the east of the St. Andrews Bay inlet along Tyndall and Mexico Beaches, which are known over wintering areas (Frank Parauka 2006, personal communication for the Panama City Shore Protection Project Biological Assessment, April 13, 2006). Gulf sturgeons from the Brothers, Yellow, Apalachicola and Choctawhatchee Rivers have been located off Tyndall and/or Mexico Beaches in water depths typically of 12-20 feet (Frank Parauka 2006, personal communication for the Panama City Shore Protection Project Biological Assessment, April 13, 2006). Studies supporting the critical habitat rule indicated that the Gulf sturgeon’s diet includes amphipods, lancelets, polychaetes, gastropods, shrimp, isopods, mollusks and crustaceans.

5.6.4 Presence in Project Area

The reef site is located within Unit 11 critical habitat area for the Gulf Sturgeon (see Figure below.). Unit 11 includes a portion of the Gulf of Mexico as defined by the following boundaries. The western boundary is the line of longitude 87/20.0'W (approximately 1 nm (1.9 km) west of Pensacola Pass) from its intersection with the shore to its intersection with the southern boundary. The northern boundary is the MHW of the mainland shoreline and the 72 COLREGS lines at passes as defined at 30 CFR 80.810 (a-g). The southern boundary is 1 nm (1.9 km) offshore of the northern boundary. The eastern boundary is the line of longitude 85/17.0'W from its intersection with the shore (near Money Bayou between Cape San Blas and Indian Peninsula) to its intersection with the southern boundary.


Unit 11
Florida Nearshore
Gulf of Mexico
Critical Habitat Unit
Critical Habitat
Rivers
State Line
County Line
This map is provided only for illustrative purposes of Gulf sturgeon critical habitat. For the precise legal definition of critical habitat, please refer to the narrative unit descriptions.
ALABAMA
FLORIDA
SANTA ROSA
OKALOOSA
WALTON
BAY
GULF
ESCAMBIA
Escambia River
Blackwater River
Yellow River
Shoal River
Choctawhatchee River
PENSACOLA BAY
PENSACOLA PASS
CHOCTAWHATCHEE BAY
ST ANDREW BAY
ST JOSEPH BAY
Money Bayou
GULF OF MEXICO
30 0 30 60 90 Miles
N

Since Gulf sturgeon may occur in the project area, a discussion of the project relative to the seven elements considered essential for the conservation of the species follow:

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

The project site is not located within a riverine area and will not alter or negatively affect foraging opportunities.

(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;

The project site is not located within spawning areas, and thus will not affect spawning behavior or suitable substrates

(3) Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, 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;

The project site is not located within a riverine area, and thus will not affect aggregation behavior or fish movement.

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

The proposed project will not alter flow patterns and this is not expected to negatively affect behavior, growth or reproductive activity.

(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;

The project is not expected to adversely impact water quality. For a short duration after initial reef deployment there will be some re-suspension of the in-situ sediments, which should settle out naturally. Turbidity reduction devices would not be effective and cannot be reasonably deployed in this circumstance due to longshore and cross-shore currents. The proposed activity will not affect water quality and thus not affect sturgeon activities that depend on the maintenance of a certain quality of water.

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

The proposed activity will not alter sediment composition and thus it is expected that the project will not alter normal behavior, growth, and viability of all life stages of sturgeon.

(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).

The proposed activity will not hinder sturgeon migration patterns. The proposed activity will not affect migration behavior of the gulf sturgeon.

Since Gulf sturgeon may occur in the project area, the applicant will comply with the "Sea Turtle and Smalltooth Sawfish Construction Conditions" which also applies to sturgeon, provided in **Attachment E**.

The project is not anticipated to affect Gulf sturgeon foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Gulf sturgeon.

5.7 West Indian Manatee

5.7.1 Status and Threats

The West Indian manatee, also known as the Florida manatee, is a federally listed endangered aquatic mammal protected under the Endangered Species Act. The Florida manatee population is divided into four subpopulations; the Upper St. Johns River (4% of the population); Atlantic Coast (46%); Southwest Florida (38%); and Northwest Florida (12%) (USFWS 2007). Based on published data for the survival rates, reproduction and population growth, the Upper St. Johns River and Northwest Florida subpopulations are expanding and doing well. The Atlantic Coast subpopulation is likely stable and little information exists on the status of the Southwest Florida subpopulation (USFWS 2007).

Based on the 2001 statewide aerial synoptic survey, it is believed that the minimum population is 3,276 individuals. The manatee population appears to have increased over the past few decades. In the last decade, annual mortality in Florida has averaged nearly 150 animals a year. In 2006, there were 417 manatee deaths in Florida state waters. In 2005, there were 396 manatee deaths (FWCC 2007). These statistics may reflect an increase in population growth, increased mortality or better detection of carcasses. However, the best available data suggest that Florida's manatee population is stable or growing in all regions of the state except the Southwest, which may contain more than a third of the statewide population. Red tide continues to threaten manatees on Southwest Florida, with 37-96 deaths annually in four of the past five years. Preliminary findings suggest red tide may have been responsible for the deaths of 61 manatees in 2006.

A large percent of mortality is due to collisions with watercrafts, particularly mortality of calves. The increasing human population growth and visitation in Florida has contributed to a steady increase in the number of watercraft using Florida's waters. In 2001, 943,611 vessels were registered in the State of Florida, a 42% increase since 1993. The Florida Department of Community Affairs estimated that between 300,000 and 400,000 boats registered in other states us Florida waters each year. With the projected increase in Florida's population, coupled with an increase in watercraft usage on Florida's waters, interactions between boats and manatees are expected to significantly increase into the foreseeable future. Another factor in their decline has been the loss of suitable habitat through incompatible coastal, particularly destruction of seagrass beds.

Manatees have few natural predators, and the greatest natural threats are exposure to cold temperatures, hurricanes and poisoning from ref tide (USFWS 2007).

5.7.2 Distribution and Range

During the cooler months between October and April, Florida manatees concentrate in areas of warmer water. Manatees are thermally stressed at water temperatures below 18ºC (64.4ºF), therefore, during winter months, when ambient water temperatures approach 20ºC (68ºF), the manatee population confines itself to the coastal waters of the southern half of peninsular Florida and to springs and warm water industrial outfalls as far north as southeast Georgia. Manatees also winter in the St. Johns River near Blue Spring State Park. Severe cold fronts have been known to kill manatees when the animals did not have access to warm water refuges. During summer months, they may migrate as far north as coastal Virginia on the east coast and the Louisiana coast on the Gulf of Mexico and appear to choose areas based on an adequate food supply, water depth and proximity to freshwater. Annual migratory circuits of some individuals through the intracoastal waterway of the Atlantic Coast are 1,700 km round trips at seasonal travel rates as high as 50km/day.

5.7.3 Habitat

Manatees inhabit both salt and fresh water and can be found in shallow (typically 5ft. to 20ft.), slow moving rivers, estuaries, saltwater bays, canals and coastal areas throughout their range. Manatees have been occasionally observed as far as about four miles off the Florida Gulf coast. The West Indian manatee is herbivorous and feeds upon aquatic plants such as hydrilla, eelgrass and water lettuce.

5.7.4 Presence in the Project Area

Since the Florida manatee may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures" guidance for marine turtles and marine mammals and provided in **Attachment C**.

The project is not anticipated to affect Florida manatee foraging areas or critical habitat therefore the deployment of artificial reefs within the deployment sites will not likely have an adverse affect on the Florida manatee.

6.0 Status of Not Listed Species and Habitat

6.1 Bottlenose Dolphin

The northern Gulf of Mexico coastal bottlenose dolphin (*Tursiops truncatus*) stock has been defined for management purpose as the bottlenose dolphins occupying the area which extends from approximately 84ºW longitude to the Mississippi River Delta. Coastal waters are defined as those from shore, barrier islands, or presumed bay boundaries to 20 m isobath. As a working hypothesis, it is assumed that dolphins occupying habitats with dissimilar climactic, coastal and oceanographic characteristics might be restricted in their movements between habitats. Bottlenose dolphin abundance for the northern Gulf of Mexico was estimated to be 4,191 dolphins in an assessment preformed in 1993.

The level of direct human caused mortality is unknown. There are a number of difficulties associated with the interpretation of stranding data. Stranding data probably underestimate the extent of fishery related mortality and serious injury because not all of the dolphins which die or are seriously injured wash

ashore, nor will all of those that do wash ashore necessarily show signs of entanglement or other fishery interaction.

The status of this stock relative to optimum sustainable population is not known and population trends cannot be determined as a result of insufficient data. This species is not listed as threatened or endangered under the Endangered Species Act, but is protected under the Marine Mammal Protection Act.

Since the Bottlenose dolphin may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures" guidance for marine turtles and marine mammals provided in **Attachment D**.

The project is not anticipated to affect Bottlenose dolphin foraging areas or habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Bottlenose dolphin.

6.2 Alligator Gar

The range of the alligator gar (*Atractosteus spatula*) extends from the Florida Panhandle, through the Gulf Coastal Plain and the Mississippi River Basin extending north to the lower portions of the Ohio and the Missouri River, and ranges southwest through Texas down to Veracruz, Mexico. There is a population in the Mississippi Sound and the brackish waster of the Gulf Coast and Mobile-Tensaw Delta.

The alligator gar is disappearing from many parts of the range and declining population everywhere due to over fishing and the construction of dikes, dams, and other flood control devices, resulting in the loss of key breeding habitat.

The gar inhabits large, slow moving rivers, reservoirs, oxbow lakes, bayous and bays, in fresh and brackish water. The alligator gar is the most tolerant gar species of high salinity and occasionally strays into salt water. Young gars may be seen at the surface in debris such as leaves and twigs. They prefer large rivers that have a large overflow floodplain, but these rivers have all but disappeared in North America sue to the use of dredging, dams, dikes, and levees.

Since the Alligator gar may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in **Attachment D** and **E**.

The project is not anticipated to affect Alligator gar foraging areas or habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Alligator gar.

7.0 Conclusions

Based on the previously mentioned findings, it has been determined that the proposed project may affect, but is not likely to adversely affect the following species

- Loggerhead sea turtle
- Green sea turtle
- Kemp's ridley sea turtle
- Leatherback sea turtle
- Hawksbill sea turtle

- Gulf sturgeon
- West Indian manatee
- Bottlenose dolphin
- Alligator gar

There is no designated critical habitat for the Florida manatee; therefore there will be no adverse modifications to critical habitat for this species as a result of the proposed action.

The reef site is located within Unit 11 critical habitat area for the Gulf Sturgeon. This assessment contains a discussion of the project relative to the seven elements considered essential for the conservation of the species. The project is not anticipated to affect Gulf sturgeon foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Gulf sturgeon.

The project is not expected to adversely impact water quality. For a short duration after initial reef deployment there will be some re-suspension of the in-situ sediments, and are expected to settle out naturally. Turbidity reduction devices are very difficult to deploy and maintain in the nearshore wave and current climate. They likely would not prove effective in these conditions.

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Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region

Background

The National Marine Fisheries Service (NMFS) has determined that collisions with vessels can injure or kill protected species (e.g., endangered and threatened species, and marine mammals). The following standard measures should be implemented to reduce the risk associated with vessel strikes or disturbance of these protected species to discountable levels. NMFS should be contacted to identify any additional conservation and recovery issues of concern, and to assist in the development of measures that may be necessary.

Protected Species Identification Training

Vessel crews should use an Atlantic and Gulf of Mexico reference guide that helps identify protected species that might be encountered in U.S. waters of the Atlantic Ocean, including the Caribbean Sea, and Gulf of Mexico. Additional training should be provided regarding information and resources available regarding federal laws and regulations for protected species, ship strike information, critical habitat, migratory routes and seasonal abundance, and recent sightings of protected species.

Vessel Strike Avoidance

In order to avoid causing injury or death to marine mammals and sea turtles the following measures should be taken when consistent with safe navigation:

1. Vessel operators and crews should maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species.

2. When whales are sighted, maintain a distance of 100 yards or greater between the whale and the vessel.

3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards or greater between the animal and the vessel whenever possible.

4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.

5. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures should always be exercised. The vessel should attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel and when safety permits, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

Additional Requirements for the North Atlantic Right Whale

1. If a sighted whale is believed to be a North Atlantic right whale, federal regulation requires a minimum distance of 500 yards be maintained from the animal (50 CFR 224.103 (c)).

2. Vessels entering North Atlantic right whale critical habitat are required to report into the Mandatory Ship Reporting System.

3. Mariners should check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard NAVTEX broadcasts, and Notices to Mariners. Commercial mariners calling on United States ports should view the most recent version of the NOAA/USCG produced training CD entitled "A Prudent Mariner's Guide to Right Whale Protection" (contact the NMFS Southeast Region, Protected Resources Division for more information regarding the CD).

4. Injured, dead, or entangled right whales should be immediately reported to the U.S. Coast Guard via VHF Channel 16.

Injured or Dead Protected Species Reporting

Vessel crews should report sightings of any injured or dead protected species immediately, regardless of whether the injury or death is caused by your vessel.

Report marine mammals to the Southeast U.S. Stranding Hotline: 877-433-8299
Report sea turtles to the NMFS Southeast Regional Office: 727-824-5312

If the injury or death of a marine mammal was caused by a collision with your vessel, responsible parties should remain available to assist the respective salvage and stranding network as needed. NMFS' Southeast Regional Office should be immediately notified of the strike by email (takereport.nmfsser@noaa.gov) using the attached vessel strike reporting form.

For additional information, please contact the Protected Resources Division at:

NOAA Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
Tel: (727) 824-5312
Visit us on the web at http://sero.nmfs.noaa.gov

Print Form | Submit by Email

NOAA Fisheries Service

Southeast Region Ship Strike Report

Reporter Information

Reporting Vessel/Aircraft Name or # | Reporter's Name | Reporter's phone | Date of Report

Strike Vessel Information *(complete all that apply)*

TYPE OF VESSEL: Check all that apply

- ☐ Container
- ☐ Tanker
- ☐ Freight
- ☐ Research
- ☐ Fishing
- ☐ Towing
- ☐ Government
- ☐ Whale watch
- ☐ Ferry
- ☐ Recreational
- ☐ Other

Specify _____

Draft _____ ◯ Feet ◯ Meters

Forward _____

Aft _____

Mean _____

Name of Vessel involved in Strike | Gross Tonnage | Vessel Length ◯ Feet ◯ Meters

Vessel Make | Vessel Model | Propulsion | Engine Make

Distance between shafts | Horsepower | Prop Diameter | Prop Pitch

Observed or Noted Strike Information *(strike was noted visually or impact felt)*

Date of Strike | Time of Strike ◯ Local ◯ GMT | General Location | North Latitude | West Longitude

ENVIRONMENTAL CONDITIONS AT TIME OF STRIKE

Lighting | Weather | Visibility | Distance of Visibility ◯ Kilometers ◯ Miles | Air Temperature ◯ Degrees F ◯ Degrees C

Wind Speed | Direction (degrees) | Current Speed | Direction (degrees) | Water depth

Wave Height ◯ Feet ◯ Meters | Swell Height ◯ Feet ◯ Meters | Water Depth ◯ Feet ◯ Meters

NOAA Fisheries Service

Southeast Region Ship Strike Report - Continued

NAVIGATION INFORMATION AT TIME OF STRIKE

Vessel Activity

Engine RPMs

Engine Speed (Knots)

Vessel Course (Degrees)

Autopilot ON

Autopilot OFF

Total # of watchstanders

on Navigation Bridge

on Observation Bridge

on Bow

Other

INCIDENT INFORMATION

Part of vessel struck by whale

Describe what was seen, felt, heard, etc.

Was avoidance action taken

Describe action taken, or reasons why avoidance not possible

Comments on damage to vessel

NOAA Fisheries Service

Southeast Region Ship Strike Report - Continued

ANIMAL INFORMATION

Time elapsed between sighting and collision

Distance from vessel when first sighted

Animal's orientation to the vessel

Estimated size/species of whale

Other marine mammals present?

Approximate number

Species

What direction was the whale traveling

Briefly describe whale's behavior prior to strike

Briefly describe whale's behavior after collision *(if seen)*

Portion of animal struck

Condition post-strike

Blood seen in water after strike

Description of wounds on animal. Use drawings to mark the location of wound(s). Include estimates of length and depth of wounds.

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