

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.)*

North Site Artificial Reef Project

Contact Information:

City of Mexico Beach
Attn: Chris Hubbard, City Administrator
P.O. Box 13425
Mexico Beach, FL 32410

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

Gulf County, Florida-Gulf of Mexico-North Site. GIS Coordinates: Latitude 29.787222 and Longitude -85.693056

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

Prefabricated artificial reef materials consisting of one US Coast Guard Cutter (or similar type of vessel), 69 Florida Limestone Artificial Reef modules, 82 Ecosystem Reef modules, and 28 Grouper Reef modules will be distributed as 17 patch reefs within a one-square nautical mile area currently permitted by the US Corp of Army Engineers (USACE). ***(See attached illustrations and descriptions.)*** Project will enhance environment and economy of the Gulf County area.

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.)*

Total Project Completion Cost: \$1,552,595 Previous cost of work completed by Florida Fish and Wildlife Conservation Commission and Mexico Beach Artificial Reef Association (MBARA): \$76,765.

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 City of Mexico Beach holds current permits and has successfully hired contractors for artificial reefs since 1997. Reefmakers specializes in reefing large vessels. Walter Marine has specialized in artificial reef modules since 1986.

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 project will mitigate the loss of natural and artificial marine habitat in the Gulf Mexico. It will increase biomass, rebuild fish stocks, and restore ecosystems for other marine life displaced within 1-24 months.

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.)*

This project does not conflict with other remediation and mitigation projects needed by the City. The project is supported by City Ordinance passed in 2003.

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

The City of Mexico Beach holds current permits for the project area. All artificial reef materials and their placements will comply with permits along with State and Federal Artificial Reef Program Guidelines.

Anticipated Project Outcome with Respect to Evaluation Criteria

E1. Will restore, rehabilitate, or replace a natural resource or service¹ 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.)*

The Gulf of Mexico and St Joseph Bay were directly impacted by oil product, dispersants, and marine traffic during the spill and clean-up. Tourism, commercial seafood harvest, sport fishing, diving, snorkeling and other recreational activities also declined as a result. This project will restore habitat and biomass loss in the local and surrounding vicinities. It will also help the local economy recover by increasing tourism, seafood harvest, sport fishing, and recreation

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.)*

This project will take place in the Gulf of Mexico 15 nautical miles West of the County coastline of the Saint Joseph Peninsula State Park.

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.)*

The project has been designed and is ready for immediate implementation. Permit has been issued by USACE. Contracting can begin upon receipt of funding.

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 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.)*

The local economy is highly dependent on commercial seafood harvest, recreation, and tourism stimulated by the Gulf of Mexico. According to studies conducted by the University of Florida, County economies of Northwest Florida earn an impressive annual return of \$131 to for every \$1 invested in artificial reefs. This 131 to 1 ratio makes this program very cost effective.

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.)*

Artificial reefs of these types have a productive life expectancy of greater than 50 years. Steel vessels sunk in the 1930s/1940s are still highly productive today. Prefabricated concrete modules are expected to last 100-300 years.

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

Artificial reefs immediately recruit marine life. Within 30 days, barnacle growth occurs with many small fish and crustaceans taking residence. Within 8 months, artificial reefs are covered with new marine growths supporting a food chain for marine life. Scientific studies show that artificial reefs mature within 2-3 years.

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.)*

Artificial reef construction in the local area are continues to receive favorable support because it facilitates the increasing demands for commercial seafood harvest, sport fishing, and other aquatic recreation activities such as pleasure boating, kayaking, diving, snorkeling, and more. The Mexico Beach Artificial Reef Association was established in 1997 to facilitate the public's desire for artificial reefs and the benefits derived from them. University of Florida studies show only a 0-7% opposition to artificial reefs with the remainders being neutral or in support of artificial reefs.

WE WANT YOUR INPUT!

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

Jessica Kanes
Florida Department of Environmental Protection
Environmental Specialist I
(850) 670-7707
Jessica.Kanes@dep.state.fl.us
Apalachicola NERR/FDEP
108 Island Drive
Eastpoint, FL 32328

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").

Florida Department of Environmental Protection - DWH Restoration Projects

Project Title: North Site Artificial Reef

County, Municipality, or Agency: Gulf County

DATE: 12/5/12

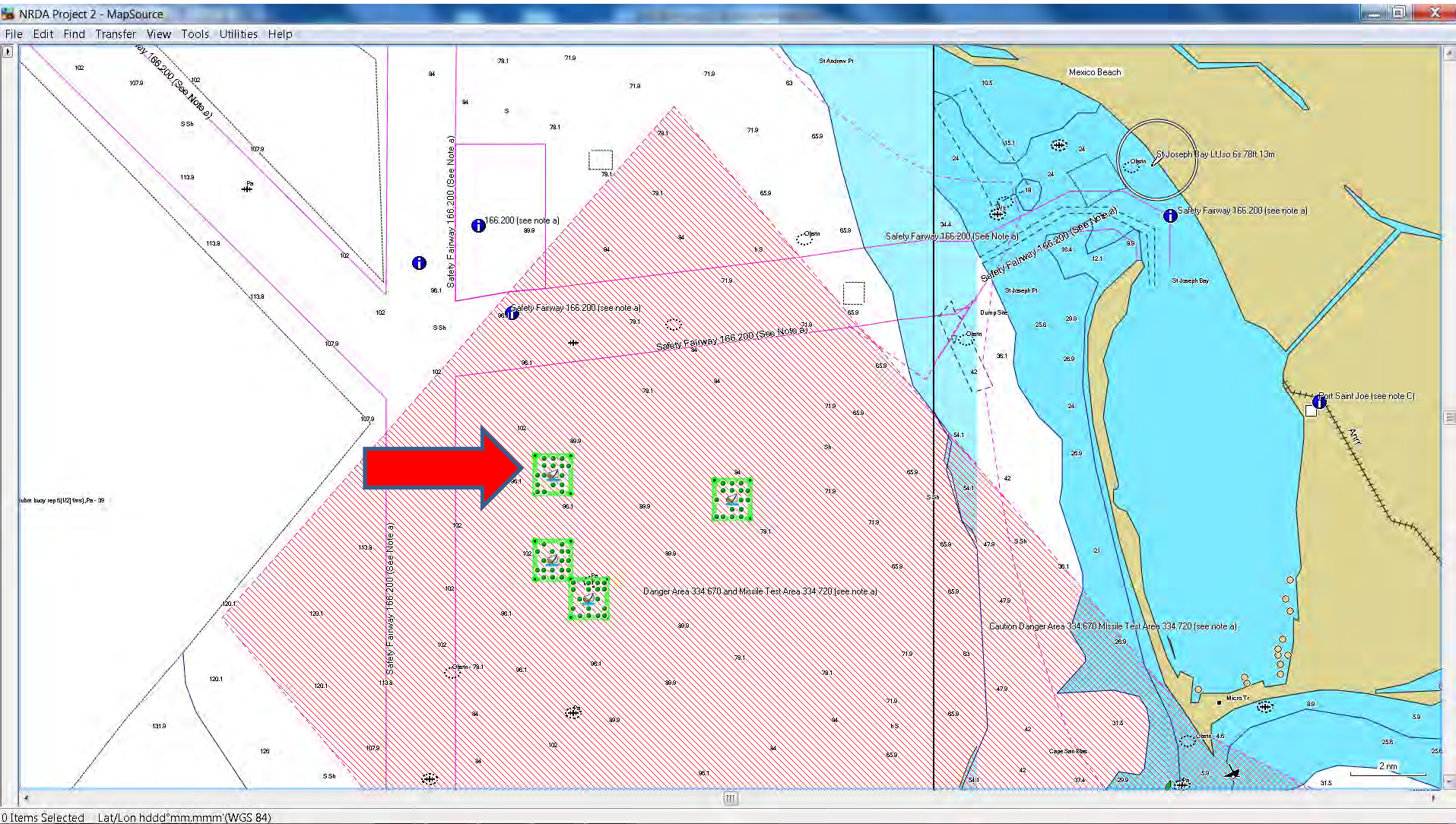
Cost Items	Cost Estimate
Planning	
Contracts	
Feasibility	
Engineering & Design ¹	
Planning Administration ²	5,000.00
[other]	
Planning Subtotal	5,000.00
Construction	
Contracts ³	1,522,595.00
Construction Administration	10,000
[other]	
Construction Subtotal	1,532,595.00
Monitoring	
Contracts	
Monitoring Administration	15,000.00
[other]	
Monitoring Subtotal	15,000.00
Project Cost	
TOTAL	1,552,595

¹includes data collection, design, permitting, landrights, bid documentation prep, etc. necessary to bring a project to contract readiness

² Administration costs for each section include overhead and indirect costs to conduct that portion of project implementation

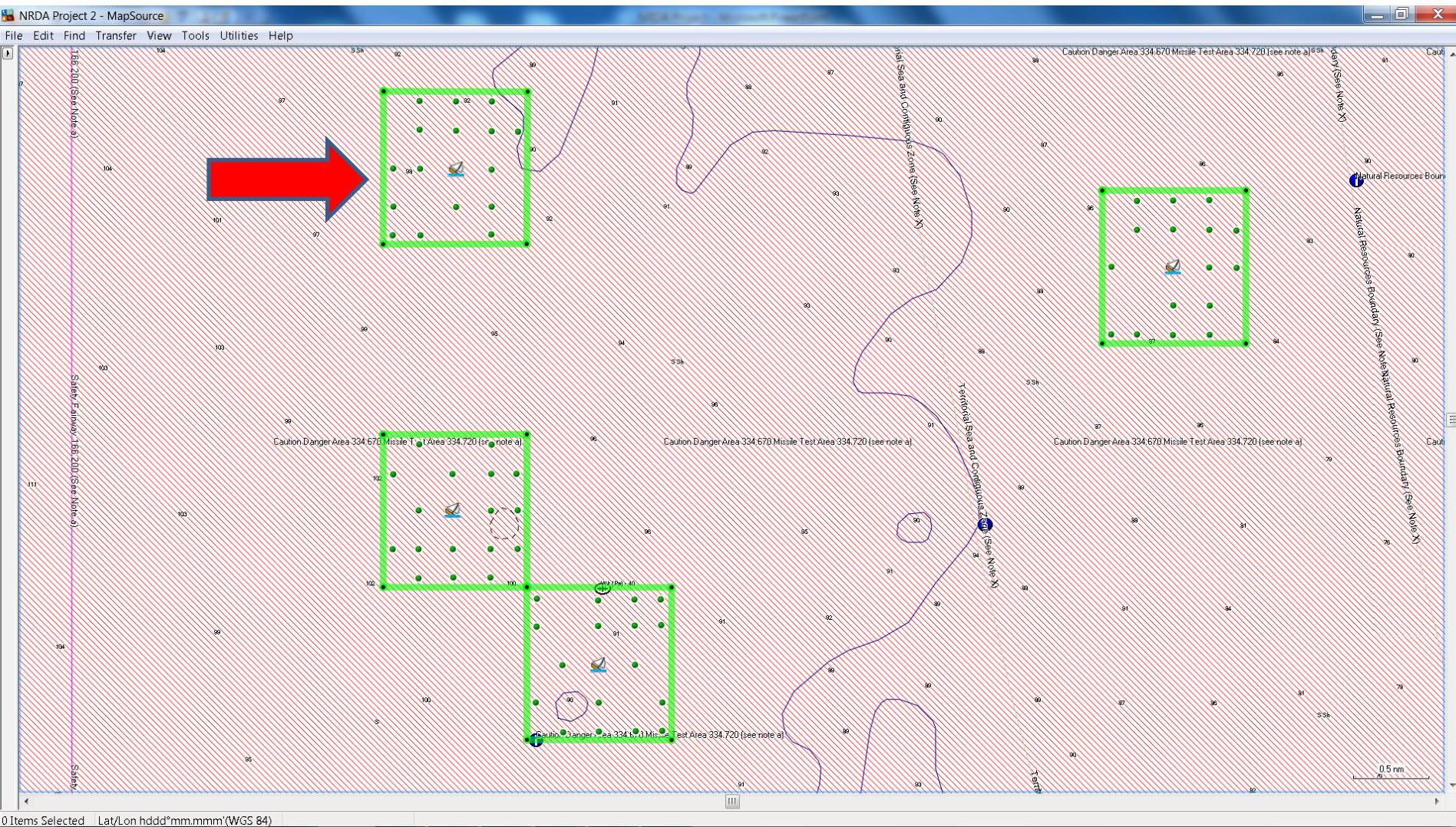
³ Should include construction cost detail such as projected unit costs for each construction item, mob/demob, plantings, and any corrective actions (if applicable)

North Site



-USACE Permit valid 18 Mar 2011 thru 18 Mar 2016

North Site Site



- Green dots represent proposed patch reefs to be constructed
- Sailboat represents 1 vessel to be deployed as a shipwreck reef

USCG *MOHAWK* (WPG-78)



Class: "A" Class Cutter
Type: Escort/Ice Breaker
Launched: 1 October 1934
At: Pusey & Jones Corporation, Wilmington Delaware
Commissioned: 19 January, 1935

Length: 165 feet
Beam: 36 feet
Draft: 12 feet, mean
Displacement: 1,005 tons
Armament: 2 x 3"/50; 2 x 20mm/80 (single mount); 2 x depth charge tracks; 4 x "Y" guns; 2 x mousetrap; 2x 50 cal. Machine guns; 2x 11 mm anti-aircraft guns.

Address:
USS MOHAWK CGC Memorial Museum
Truman Waterfront
Post Office Box 186
Key West, Florida 33041

Key West, Florida 33041

USCGC Mohawk 78



WALTER MARINE

P.O. BOX 998 • ORANGE BEACH, ALABAMA 36561
251-981-6258 FAX: 251-967-2022

The most recent artificial reef developed by Walter Marine is a Grouper reef. It's designed to target Grouper as a habitat. It has one opening to simulate a ledge like cave. The top can be covered in Limestone rock to enhance the reef's PH and habitat qualities. The design has a large opening to mimic Grouper habitat and prevent Sea Turtles from becoming trapped inside.

MATERIAL SPECIFICATIONS:

A. Detailed Description: The concrete used is 4,000 lb marine grade concrete with Limestone rock. It is reinforced with #4 (1/2") rebar framework is encased in each reef. All welded together to ensure the strongest of structures. Two lifting eyes are provided for each reef.

B. Surface Area:

Each reef has over 600 square feet of surface area.

C. Height:

The height is 2 (two) feet.

Length: 8 (eight) feet

Width: 5 (five) feet

D. Volume:

Each reef contains one cubic yard of concrete.

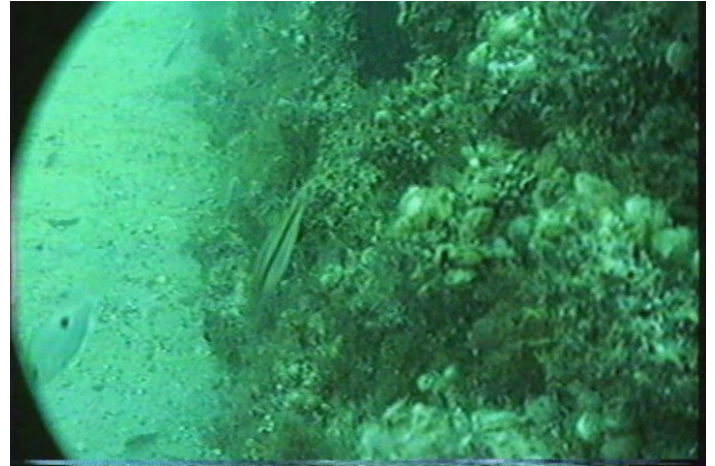


E. Total Weight:

4,000 to 5,000 lbs.

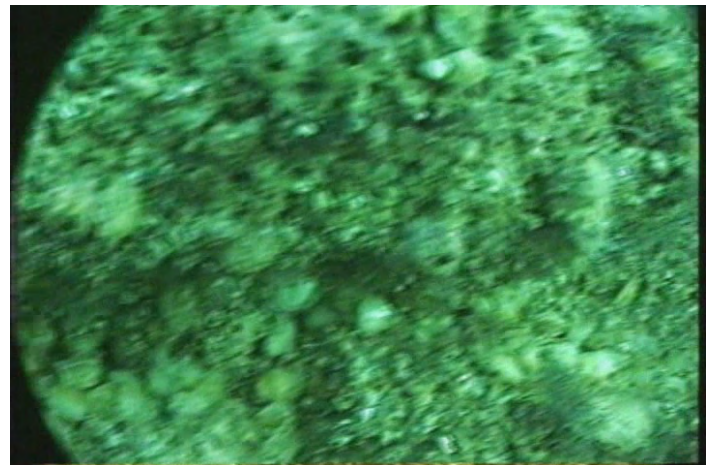
F. Weight per unit:

Each unit weights in excess of 4,000 lbs. Each reef could be ordered with 1,000 lbs of Limestone rock.



G. Microhabitat:

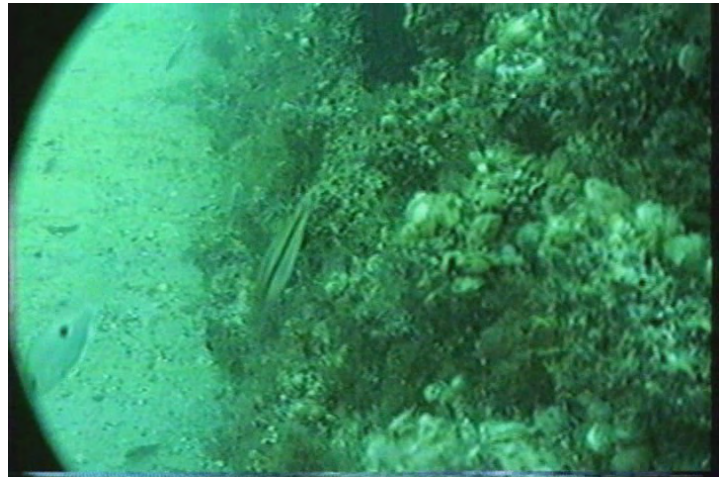
The “Grouper Reef” reef is environmentally and even more so with Limestone Rock added. Its PH perfect surface invites marine animals not usually seen on artificial reefs to settle there. The natural surface attracts and allows all types of marine organisms to attach immediately. The rock relief adds a great deal of complexity to the reef.



H. Stability/durability:

The “Grouper Reef” reef was designed for maximum stability and durability. It is heavily reinforced with 1/2 inch rebar. The rebar is welded using a special similar metal welding rod to prevent electrolysis. In addition the rebar is totally encapsulated in concrete with no exposure to salt-water.

The longevity of concrete is yet to be known, so far concrete has survived 2,000 years. It would be safe to assume the “Grouper Reef” should last 75 to 300 years underwater and possibly much longer.



I. Tendency to subside:

The low profile is not subject to movement or turning over. The foot is 6 inches wide and designed not to scour. The wide footprint will prevent the unit from subsiding.



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The most recent artificial reef developed by Walter Marine uses “Florida Limestone” rocks imbedded in its primary surface area. This coarse-grained, porous, friable variety of classic limestone is made up chiefly of shell fragments. This is the perfect medium for marine animals to attach. Concrete alone has a slightly different PH value and limits growth to hardy species such as Barnacles. Florida Limestone invites all marine animals and because its makeup is the perfect PH and soft enough to allow some boring animals to take up residence.

The design is a stable three sided pyramid with a large footprint to prevent settling and turn over. Its height is 8 feet, base 10 feet and weights in excess of 5,000 lbs.

The opening in the sides provide relief from hydraulic pressure during storms as well as fish entrances. The design is open at the top to prevent Sea Turtles from becoming trapped inside. The reef was designed to simulate a cave-like structure attractive for Grouper.

MATERIAL SPECIFICATIONS:

A. Detailed Description: The concrete used is 4,000 lb marine grade concrete with Limestone rock. Over 240 feet of #4 (1/2”) rebar framework is encased in each reef. All welded together to ensure the strongest of structures. Three lifting eyes are provided for each reef.

B. Surface Area:

Each reef has 800 square feet of surface area. The rocks alone have more surface area than a 5 foot X 5 foot boulder.

C. Height:

The height is 8 feet.

D. Volume:

Each reef contains one cubic yard of concrete.

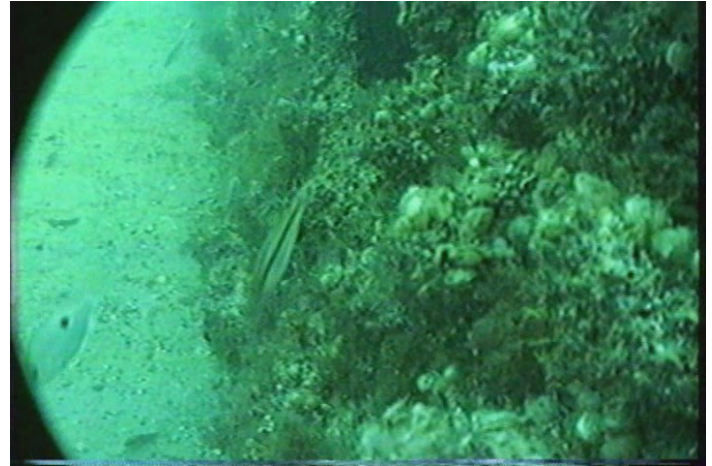


F. Total Weight:

5,000 lbs plus.

E. Weight per unit:

Each unit weights in excess of 5,000 lbs. Each reef contains approx. 1,000 lbs of Limestone rock and 4,000 lbs of concrete.

**G. Microhabitat:**

The “Florida Limestone” reef is the most environmentally friendly reef manufactured to date. Its PH perfect surface invites marine animals not usually seen on artificial reefs to settle there. The natural surface attracts and allows all types of marine organisms to attach immediately. The rock relief adds a great deal of complexity to the reef and its design elevates the rock up to and including 8 feet above the ocean floor. The Florida Limestone unit is the only manufactured reef that allows and invites all the marine life found on a natural reef



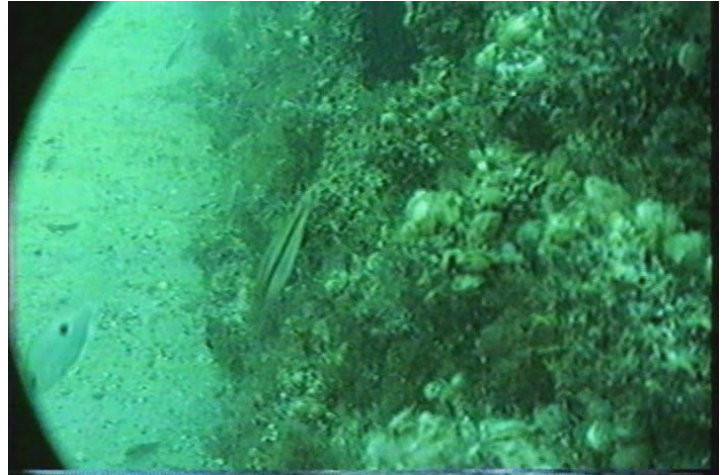
Studies in the Gulf of Mexico after Red Tide blooms found a dead zone from the bottom up to 5 feet on artificial reefs. Areas above 5 feet were unaffected and teeming with marine life as opposed the area just below the 5 foot mark. Its possible that a reef taller than 5 feet could save reef dwelling marine animals during a Red Tide attack.



H. Stability/durability:

The “Florida Limestone” reef was designed for maximum stability and durability. It is heavily reinforced with over 240 linear feet of 1/2 inch rebar. The rebar is welded using a special similar metal welding rod to prevent electrolysis. In addition the rebar is totally encapsulated in concrete with no exposure to saltwater.

The longevity of concrete is yet to be known, so far concrete has survived 2,000 years. It would be safe to assume the “Florida Limestone” should last 75 to 300 years underwater and possibly much longer.



I. Tendency to subside:

The base design draws heavily from the “Florida Special” unit which has proved itself to be hurricane proof. The “Florida Limestone” incorporates a 6 inch wide flange on the bottom to prevent settling and extended corners to increase stability. Numerous windows in each panel to relieve hydraulic pressure during strong currents to prevent turning over. Its weight in excess of 5,000 lbs., assures the reef will stay where it's put.



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Walter Marine's EcoSystems is the reef for all reasons. It is complex artificial reef, wave attenuator and oyster reef restoration tool. It's the ultimate research tool that can be configured to any size, height, distance above the bottom, variable complexity and shape. It can be installed in strong surf without danger of damage, scouring, sinking, turning over or movement.

MATERIAL SPECIFICATIONS:

A. **Detailed Description:** The concrete used is 4,000 lb marine grade concrete with Limestone rock. It is reinforced with #4 (1/2") rebar framework is encased in each reef. All welded together to ensure the strongest of structures.

B. Surface Area:

Each disc has over 33 square feet of surface area. .

C. Height:

Variable: Each disc is 9 to 12 inches tall.

Diameter: 3 to 6 feet

D. Volume:

Each reef contains 1/6 cubic yard of concrete.



E. Total Weight:

Per Disc 600 to 6,000 lbs

F. Weight per unit:

Each disc weights 600 lbs.

G. Microhabitat:

EcoSystems is environmentally and is along with Walter Marine's "Florida Limestone unit is the only manufactured artificial reef in the world capable of attracting and sustaining all the marine life located on a natural reef. The stackable discs is the only complex artificial reef on the market today.



H. Stability/durability:

EcoSystems is the most stable artificial reef on the market today, due to its piling mount system. The piling is constructed of fiberglass and neither the concrete discs, Limestone rock or the piling have a known life span. It is known that concrete used 2,000 years ago is still stable and the first fiberglass made over 50 years ago is structurally sound.



I. Tendency to subside:

Piling mounting negates any tendency to subside and pedestal/concrete disc mounting has proven stable in 60+ ft.



Available deployment resources:

- Manufacturing capacity is six reef units per day
- The Florida Limestone comes from a quarry in Perry Florida and is trucked Walter Marine.
- Reynolds Ready Mix is an established concrete plant less than a 1/4 mile from our location.
- Walter Marine owns its own facility on the Intra-Coastal Canal in Orange Beach, Alabama.
- Reefs are manufactured, stored and loaded onto our vessel at our location.
- Storage capacity is over 1,000 reef units.



The “MARANATHA” a “State of the Art” deployment vessel refitted in 1996 for deploying artificial reefs. Entities using the “MARANATHA” have commented on the ease and efficiency the “MARANATHA” deploys reefs.

It has a dedicated console complete with a captains' chair for the viewing of two Northstar 951 GPS's. A camera mount is provided to snap a picture of the navigation console at the time of deployment to assure the most accurate of records. Lighting is provided for nighttime operation, should it be required.

- Reef capacity 70 units
- 20 ton crane for loading and deployment
- 800 HP
- 8 Knots
- 250 KW generator capacity
- 2400 sq. feet of deck space available
- 13,000 gallons potable water
- 12,000 gallons fuel w/off-boat fueling capability
- Barge pushing and towing capability
- Air-conditioned
- Satellite telephone
- Two VHS radios
- Northstar 951 GPS
- Northstar 951 GPS



Task Plan

- The MARANATHA will arrive on site at the predetermined time
- Reef units will be deployed using GPS coordinates or for multiple deployments buoys will be used or in some cases anchoring.
- All reefs are guaranteed to be upright and fully intact.
- No sub-contractors are used by Walter Marine
- All reef operations are fully compliant with U.S. Army Corps of Engineers, U.S. Coast Guard, EPA, Florida Department of Environmental Protection, Florida Fish & Wildlife Commission and the Gulf States Artificial Reef Plan.



Schedule of Operations

- Upon award of contract officials are invited to our facility at anytime to inspect reef units and begin permitting process.
- Walter Marine will monitor the “sea state” conditions for a deployment window.
- A mutually agreeable window for deployment will be arranged.
- The “MARANATHA” will be loaded with the permitted “Florida Limestone” reef units.
- Travel permit arrangements will be made with the Alabama Department of Conservation
- The “MARANATHA” will depart at a time to allow sufficient time to arrive onsite at the agreed upon time.
- All units will be deployed in one day.

