

MINUTES OF MEETING
DANIA BEACH CITY COMMISSION
VIRTUAL WORKSHOP - ARTIFICIAL REEF PROJECT OPTIONS
TUESDAY, JANUARY 5, 2021 - 4:00 PM

1. Call to Order/Roll Call

Mayor James called the meeting to order at 4:01 p.m.

Present:

Mayor:	Tamara James
Vice-Mayor:	Marco A. Salvino, Sr.
Commissioners:	Joyce L. Davis
	Lori Lewellen
	Lauren Odman
City Manager:	Ana M. Garcia, ICMA-CM
City Attorney:	Thomas Ansbro
City Clerk:	Thomas Schneider

2. Items for Discussion

2.1 Artificial Reef Project Options

Stacy Brown, Marine Biologist, Director of Education of the 1,000 Mermaid Relief Project, gave a presentation and reviewed the options, which are attached to and incorporated into these minutes.

Discussion ensued regarding the above-water and underwater selfie stations, and ocean based modules. Discussion also ensued regarding the artificial reef permit zone.

Ms. Brown further reviewed the underwater project sculpture options, Options 1, 2, and 3.

Discussion ensued regarding mixing and matching features between the options.

Shelby Thomas, CEO of 1,000 Mermaids, further described options for swim-throughs, that could be done retroactively, and turtles on lower profile modules.

Further discussion ensued.

The Commission agreed to the large underwater mermaid sculpture with a plaque, a large swim-through module with a logo, a medium-sized mermaid selfie station, two mermaids, one turtle, and 15 low profile modules.

Commissioner Odman requested custom renderings of what the Commission has chosen be put together.

Ms. Brown explained the steps that would follow this workshop.

Evan Snow, Executive Director of 1,000 Mermaids, noted that there will be an opportunity for the Commission do have some sort of unveiling.

Ms. Brown noted she would like to discuss other matters, including deployment dates, with the Commission.

Mayor James said Commissioner Odman is the Commission liaison for this project and Ms. Brown should work with her.

Discussion ensued regarding community involvement to generate excitement for private sponsorships and coordinating deployments of the barge.

Mr. Snow addressed the pricing for the City and private individuals; he noted this is not a rushed project.

Mayor James requested Commissioner Odman get with 1,000 Mermaids to put together a package to present at a future Commission meeting.

Mr. Snow noted he would work with City staff to get the marketing campaign underway.

A brief discussion ensued regarding additional above-water modules.

Commissioner Odman felt the second above-water module should be a mermaid.

Ms. Brown suggested a module with three mermaids, which can be decided upon at a later time.

3. Adjournment

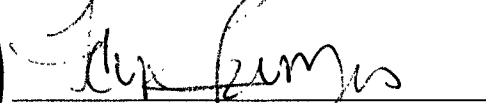
Mayor James adjourned the meeting at 5:05 p.m.

ATTEST:


THOMAS SCHNEIDER, CMC
CITY CLERK



CITY OF DANIA BEACH


TAMARA JAMES
MAYOR

Approved: January 26, 2021



DANIA BEACH
SEA IT. LIVE IT. LOVE IT.

Dania Beach Artificial Reef Project



OCEAN RESCUE ALLIANCE



#1000
MERMAIDS
www.1000mermaids.com

Project Partners

REEFCELLS

CELLULAR REEF MODULES FOR BIO-MARINE ENHANCEMENT



Saving Our Oceans, One Reef At A Time!

Ocean Rescue Alliance (ORA) is an environmental NPO that supports saving the ocean one reef at a time. Through the creation of artificial reefs designed to incorporate art, innovative designs, and safe materials, ORA will enhance marine habitats and provide unique diving locations worldwide.

Our artistically crafted reefs enable every individual the opportunity to create an eternal reef for their loved one or company. Every reef creates a lasting memory on the ocean floor that will help restore our marine ecosystems.

Our education program seeks to empower and inspire our future generations to maintain our marine environments. Our citizen science program, Coral Rangers, engages our local communities in reef monitoring and coral restoration efforts.

Our research investigates artificial design improvements, coral restoration, fish population dynamics & recruitment to contribute to effective restoration. Our goal is to spread awareness and create marine habitats that will last for generations to come.



ORA Waves of Action

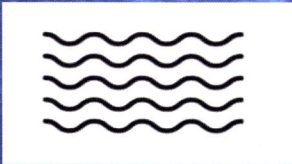




Problems Plaguing Our Reefs

- **Pollution**
- **Ocean Acidification**
- **Coral Bleaching**
- **Habitat Degradation**
- **Overfishing**

Why Create A Reef?



Environmental Development

- Increases Fish Populations
- Restores Coral Reefs
- Reduces Beach Erosion
- Creates Homes For Fish
- Reduces Storm Surge
- Recreates Natural Breakwaters
- Contain Undiscovered Cures to Disease



Increased Tourism

- Artistically Crafted Modules & Sculptures
- Interactive Dive Sites
- Unique Locations
- International Tourist Draw
- Diving Destination
- Captivates and Inspires Visitors

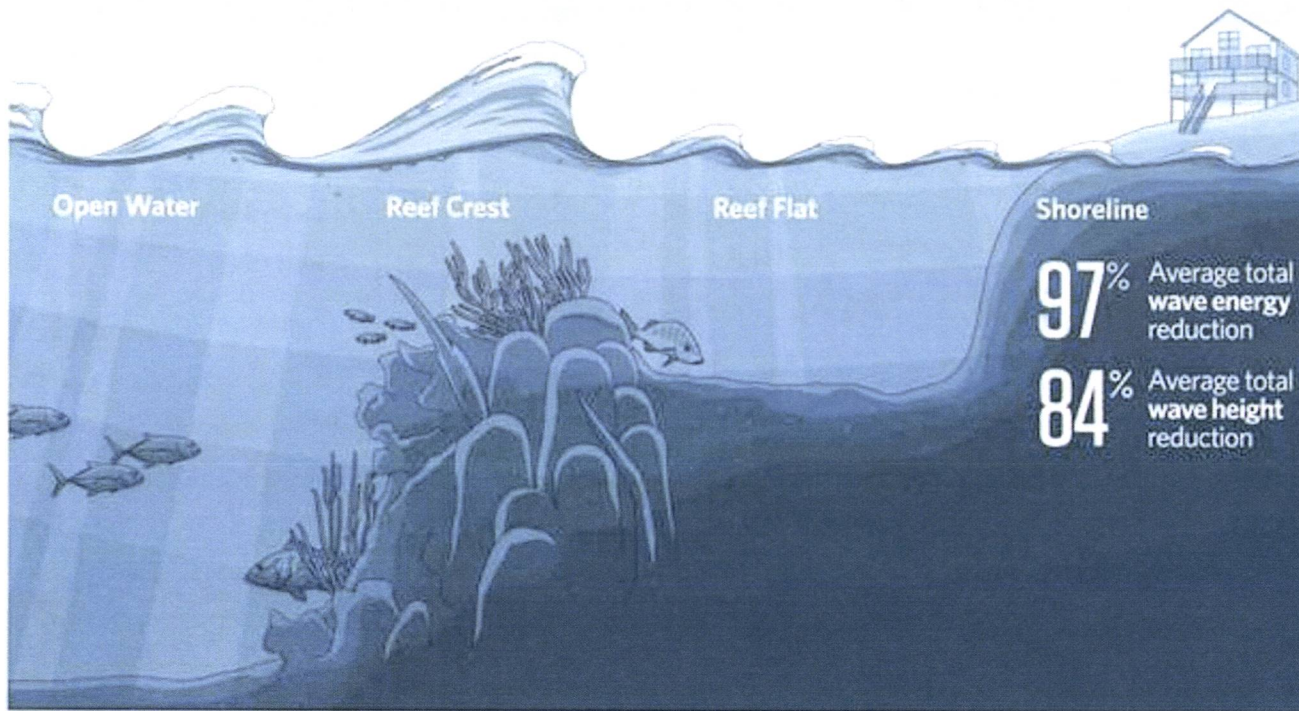


Economic Improvement

- Eco-tourism Driver
- Increased Boat Charters, Dive Shop Rentals, Filled Hotels & Restaurants, Booked Car Rentals & Travel Companies
- Community Engagement
- Citizen Science = Future Scientists & Technology Majors!

Coral Reefs Reduce Wave Energy and Height

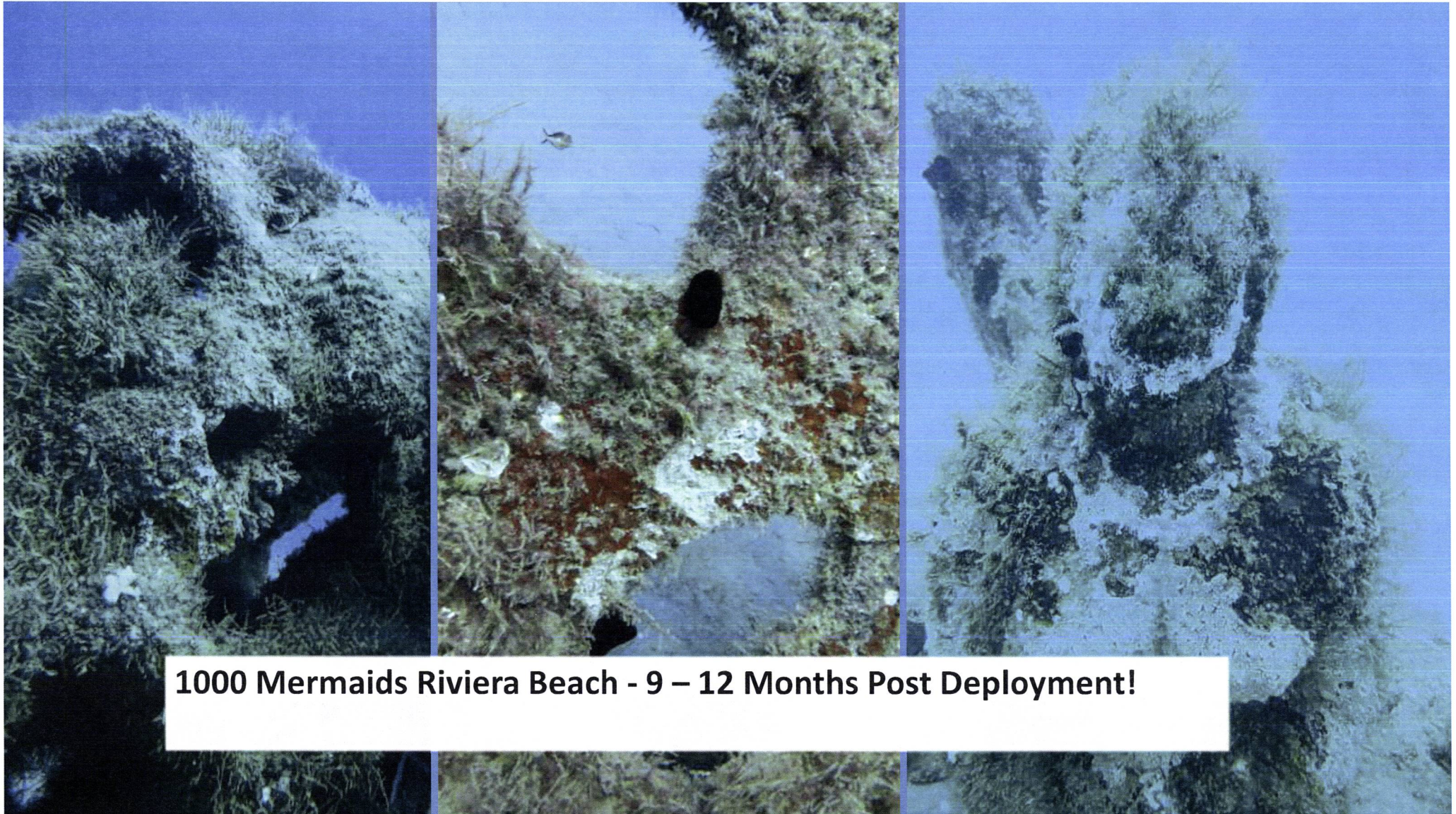
Coral reefs reduce wave energy by an average of 97 percent across all studies globally. The reef crest, or shallowest part of the reef where the waves break first, dissipates 86 percent of wave energy on its own. The whole reef reduces wave height by 84 percent.



Coral Reefs in SE Florida have an Asset Value of \$8.5 billion, generating \$4.4 billion in local sales, \$2 billion in local income, & 70,400 jobs - NOAA

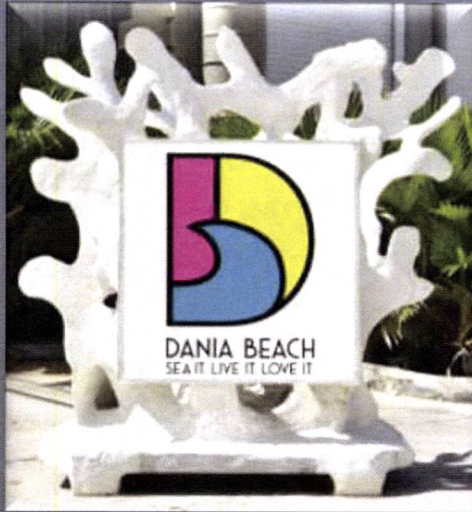
Study Citation: Ferrario, F., M.W. Beck, C.D. Storlazzi, F. Micheli, C.C. Shepard, L. Airoidi. 2014. The Effectiveness of Coral Reefs for Coastal Hazard Risk Reduction and Adaptation. *Nature Communications*. Doi:10.1038/ncomms4794

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1000 Mermaids Riviera Beach - 9 – 12 Months Post Deployment!

Dania Beach 2021 Project

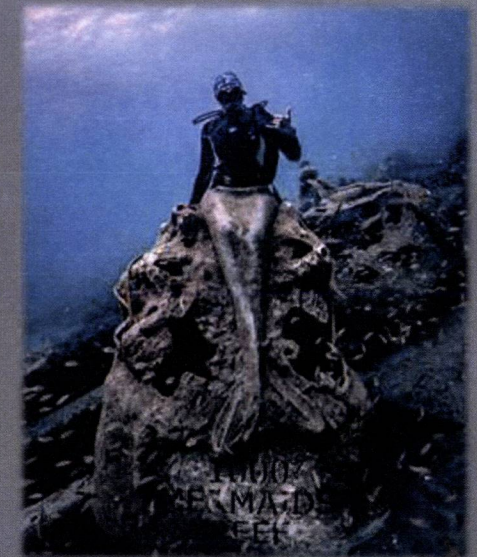
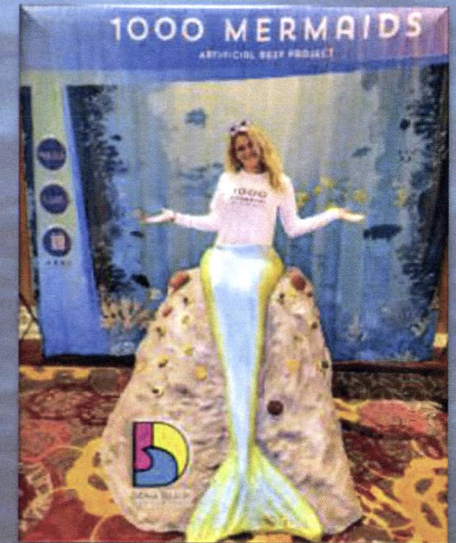


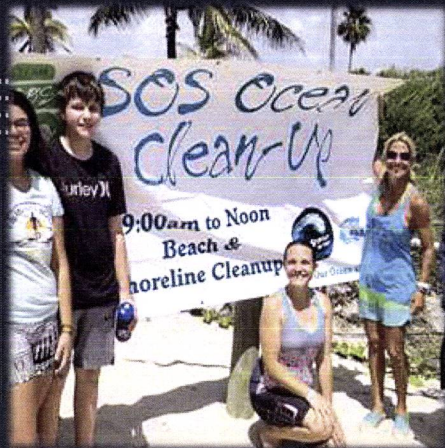
Diving Destination:
20 Module Artificial Reef

Land Based Selfie Stations:
Two with City Logo

Land Based Modules:
Two with City Logo

Community Engagement:
Coral Rangers
Citizen Science Program





Citizen Science and Education

- Community Engagement
- Workshops
- Beach & Dive Site Clean Ups
- Reef Monitoring
- Coral Restoration
- Scientifically Engaging Events & Hands On Activities



Proposed Coral Rangers Event Timeline

- February 2021 – Water Quality / Coral Reef Importance
- April 2021 – Earth Day Event / Artificial Reef Introduction – Land Based Unveiling
- June 2021 – Deployment Event
- August / Sept 2021 – Post Deployment Check – Broward County Schools Artificial Reef Build Kick-Off Event



Above Water & Underwater Selfie Stations





Sculpture Options

Art can inspire and connect people, we utilize reef sculptures to bring awareness to marine conservation while providing a unique diving location. We have the ability to make any art idea for an individual or company. Each module also provides a habitat base for marine life. Coral Loks are imbedded to provide an opportunity to outplant coral in the future.



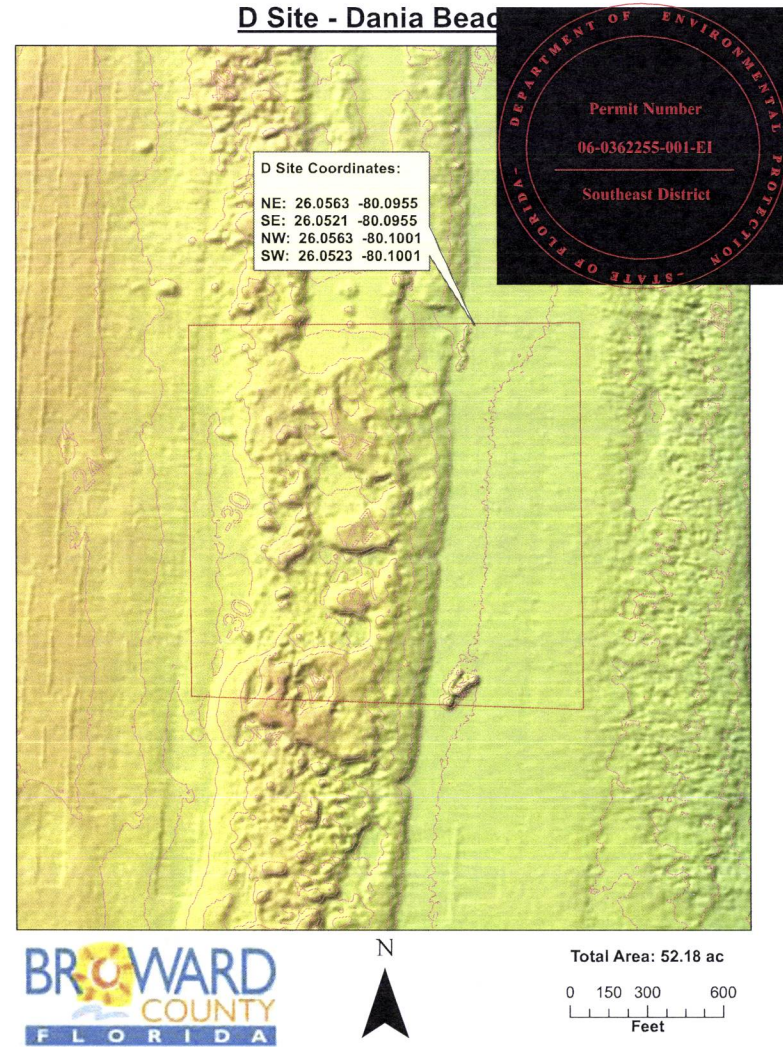
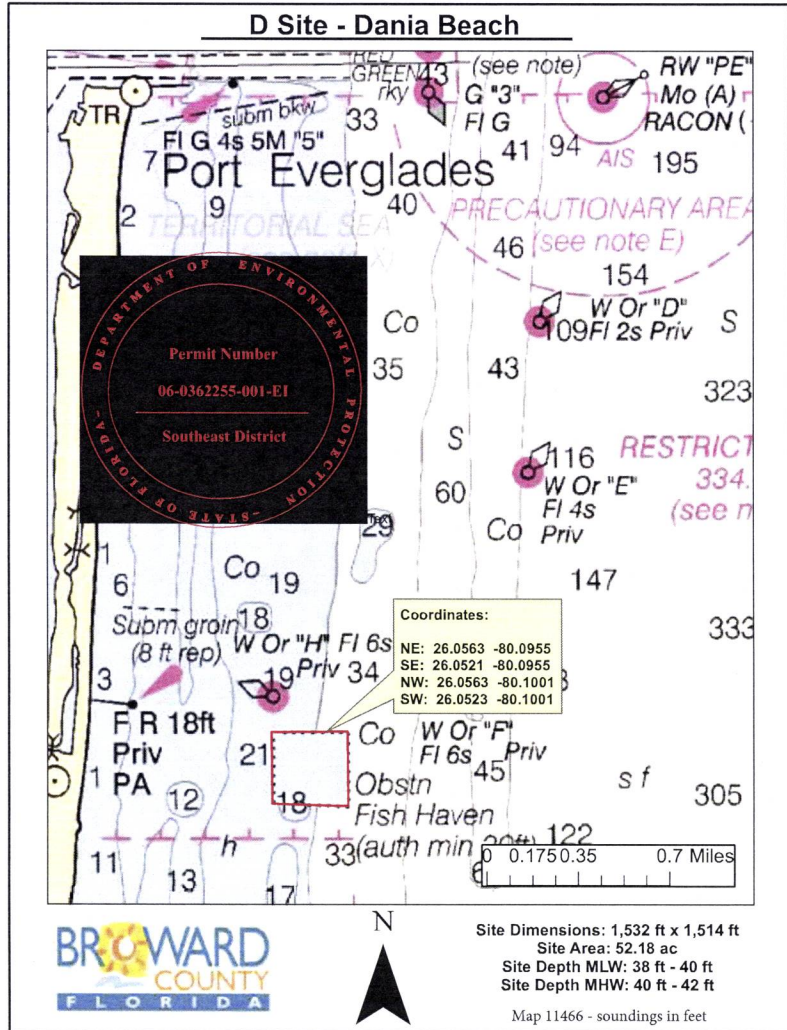
Land Based Modules



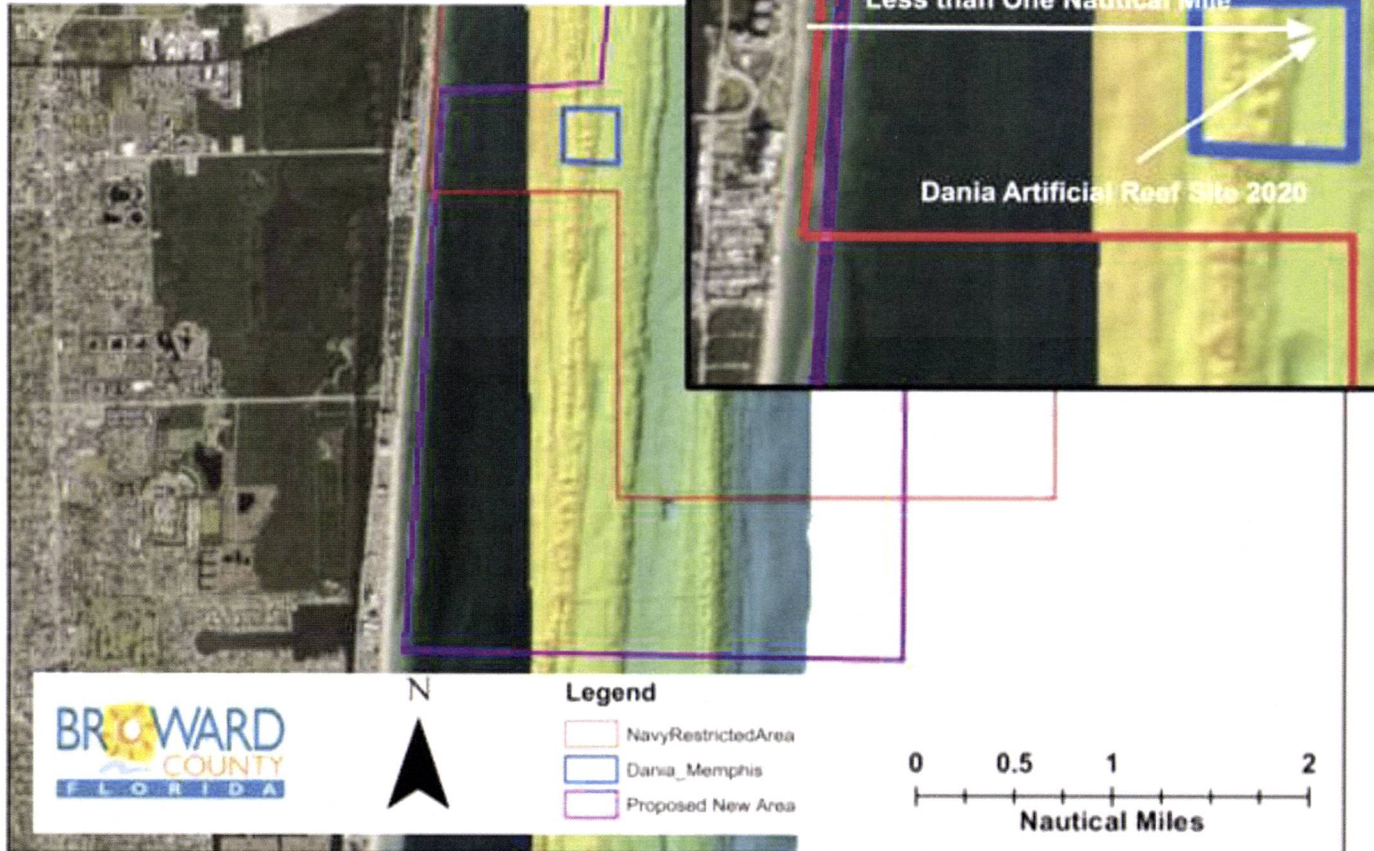
Ocean Based Modules



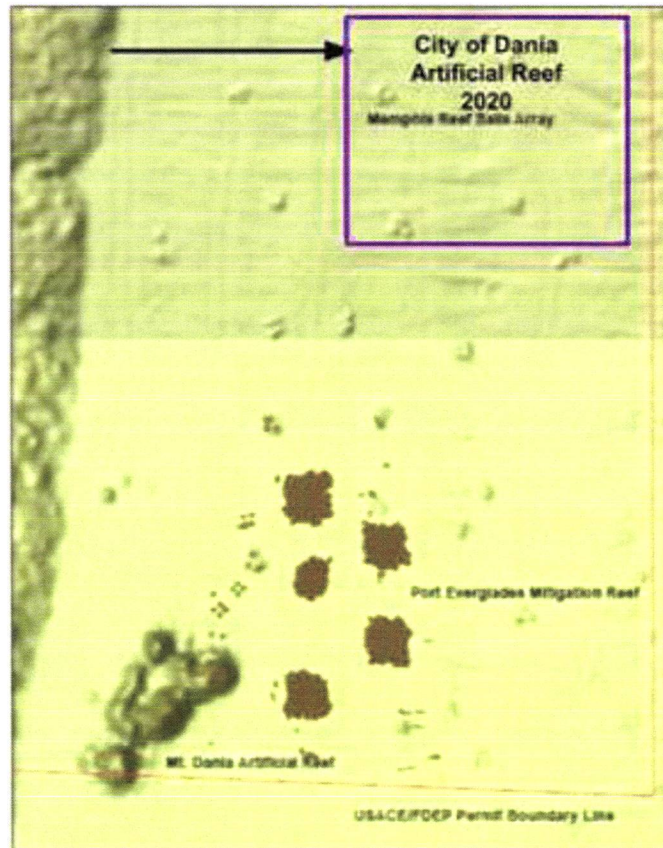
Dania Beach Artificial Reef Permit Zone



Dania Artificial Reef Permit Zone



Artificial Reef Area



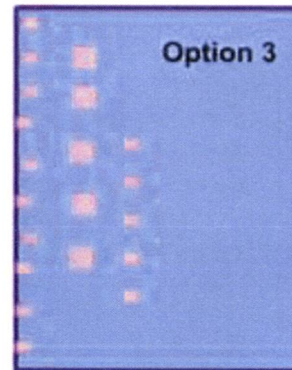
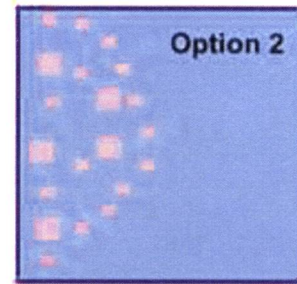
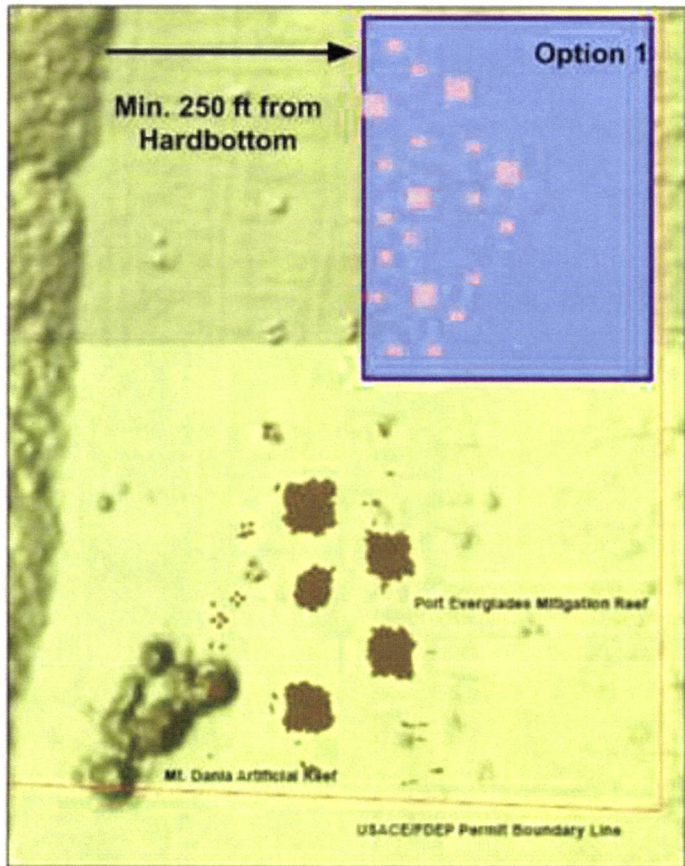
BROWARD
COUNTY
FLORIDA



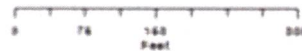
0 75 150 300
Feet

Depth: 40 feet

Artificial Reef Area - Reef Layout Options, Approx 175 ft x 175 ft



BROWARD
COUNTY
FLORIDA



Depth 40 feet

Underwater Project Sculpture Options

All Options include an additional (15) 3-6ft tall by 6ft long complex habitat modules to maximize impact for marine life.

Option 1. 3 Swim Through Modules, 2 Medium Sculptures

(1) Diver with Dania Beach Logo or Selfie Tail (1) Mermaid Sculpture

(3) Swim Through Modules with Mermaids on Sides of Module

Option 2. 3 Large Sculptures, 2 Small Sculptures

(1) Mermaid (1) Deep Sea Diver

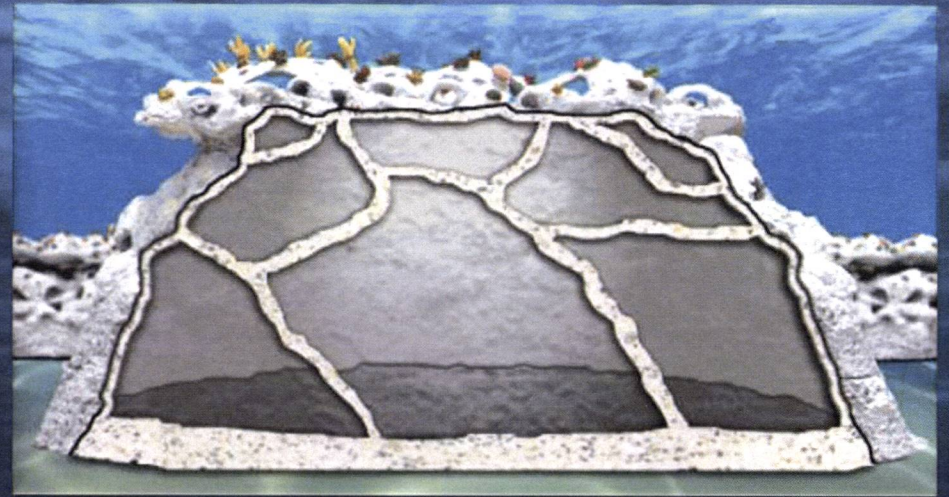
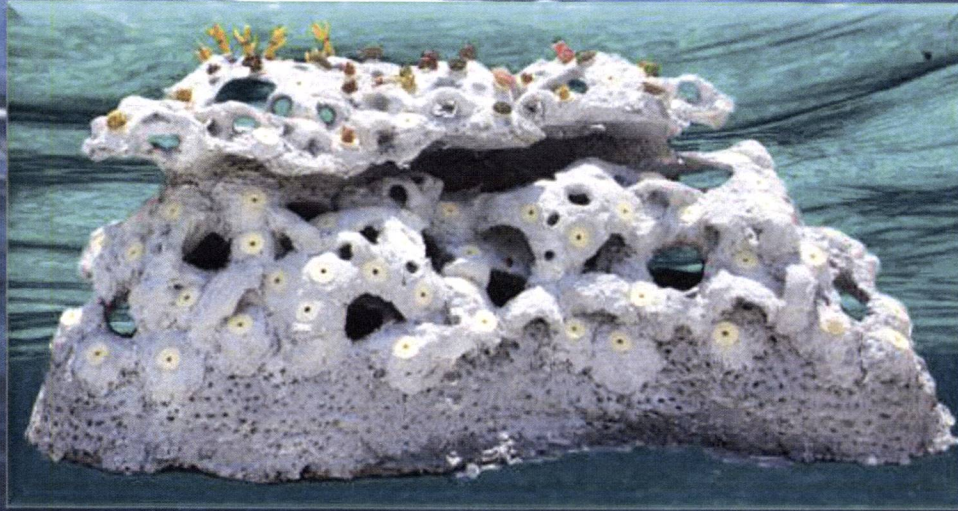
Dania Beach Logo on Large Module or Selfie Tail

Turtle Sculptures on (2) Modules

Option 3. 5 Medium Sculptures

(1) Dania Logo (2) Modules with Turtle Sculpture or Selfie Tail

(3) Small Mermaids



15 Low Profile Modules

Each reef module will consist of:

- Micro and macro habitat to promote biodiversity with interstitial spaces.
- Pass through perforations for water exchange and sunlight penetration.
- Exterior surface blasted with calcium carbonate to enhance colonization.
- Imbedded Coral Loks for future coral out planting efforts.
- A ballasted base providing increased stability and resistance to local hydrodynamic forces.

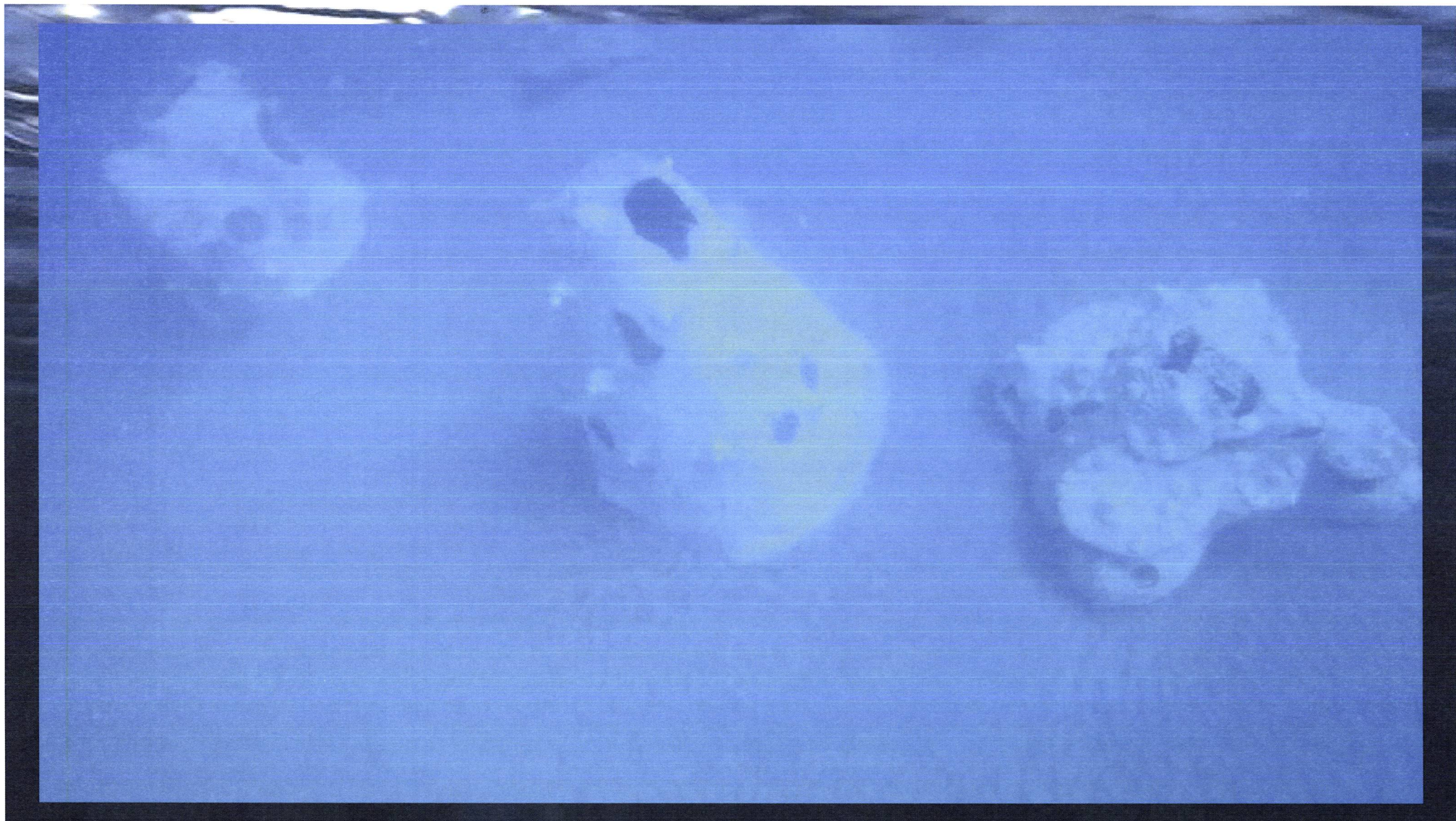


Coral Lok & Coral Lok Frag Plug

All reef modules can be fabricated with Coral Lok receivers which are designed to facilitate the rapid attachment of rescued and cultivated corals on Coral Lok plugs. This proven system of mechanically attaching coral fragments to the reef structure eliminates many of the challenges inherent in traditional coral out-planting.

Corals attached using Coral Lok devices are planted more quickly than those planted using the old method of scarifying the reef substrate and applying epoxy to the coral.



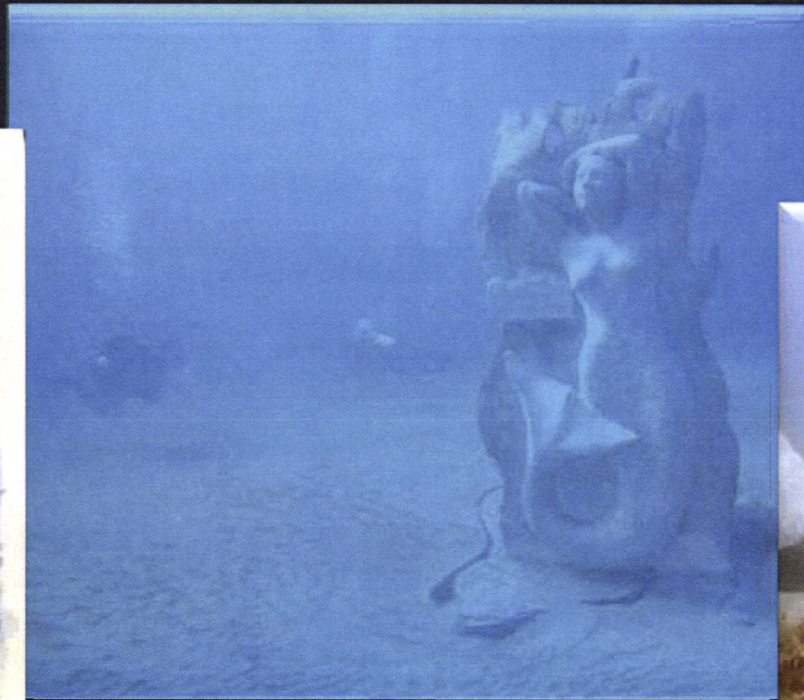
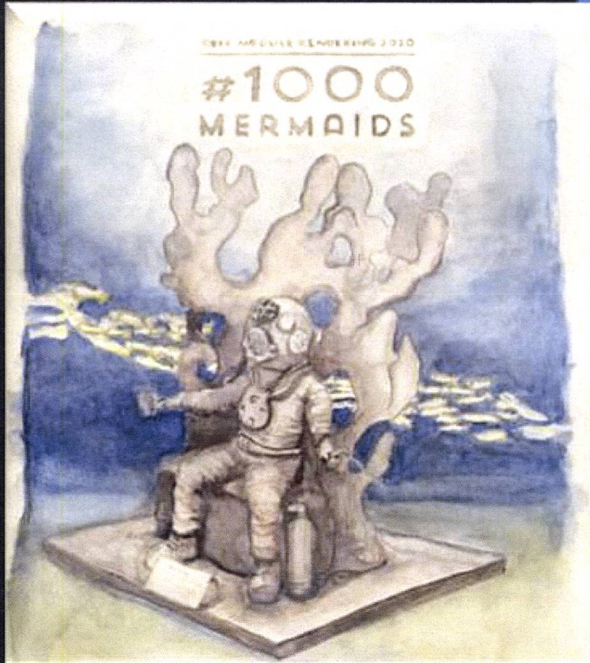


Option 1.

3 Swim Through Modules, 2 Sculptures

(1) Diver with Dania Beach Logo or Selfie Tail (1) Mermaid Sculpture

(3) Swim Through Modules with Mermaids on Sides of Module





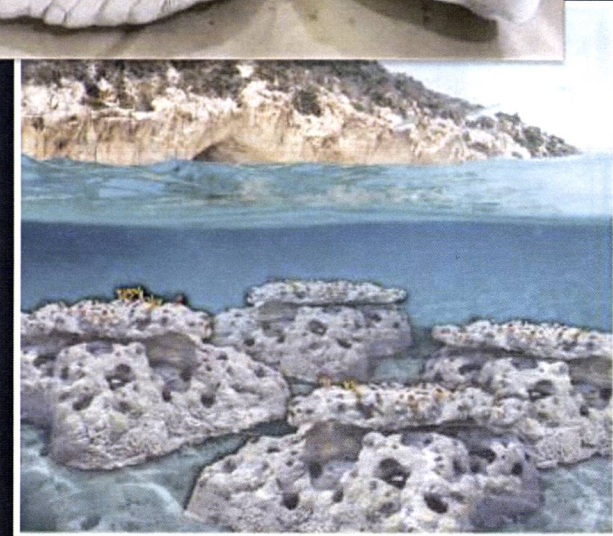
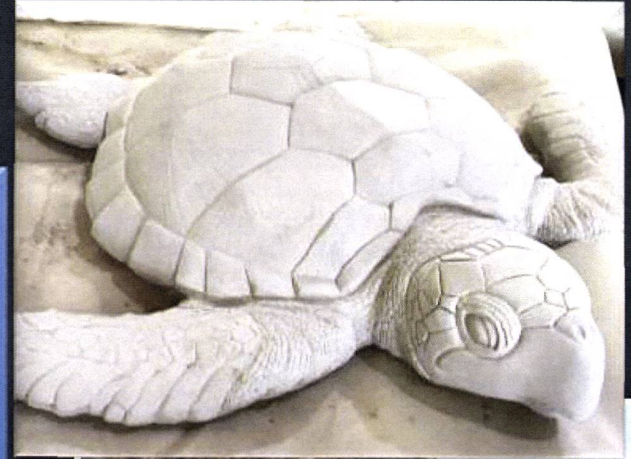
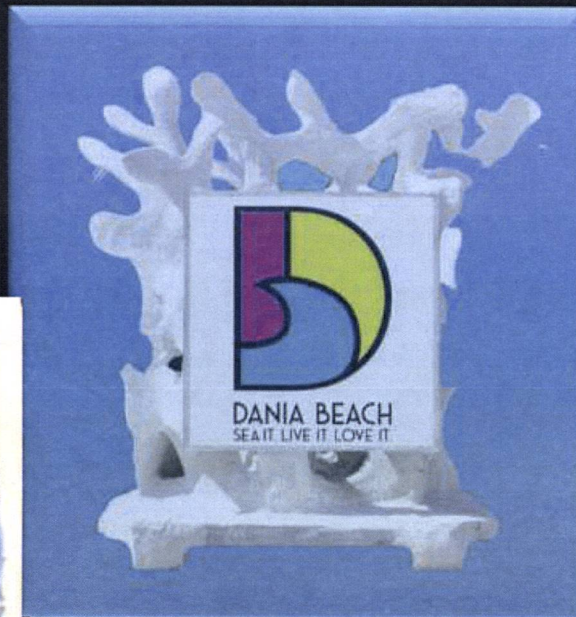
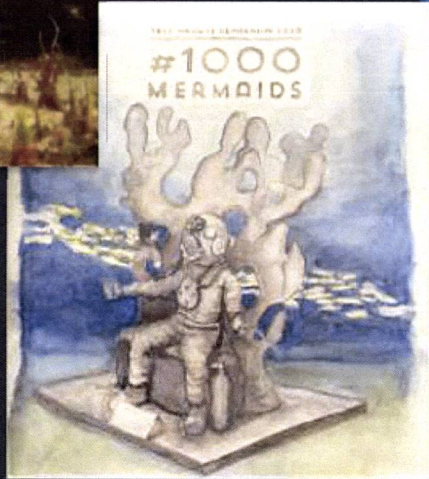
Option 2.

3 Large Sculptures, 2 Small Sculptures

(1) Mermaid (1) Deep Sea Diver

Dania Beach Logo on Large Module or Selfie Tail

Turtle Sculptures on (2) Modules

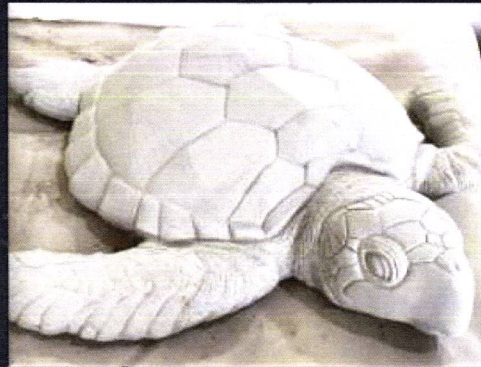


Option 3.

5 Medium Sculptures

(1) Dania Logo (2) Modules with Turtle Sculpture or Selfie Tail

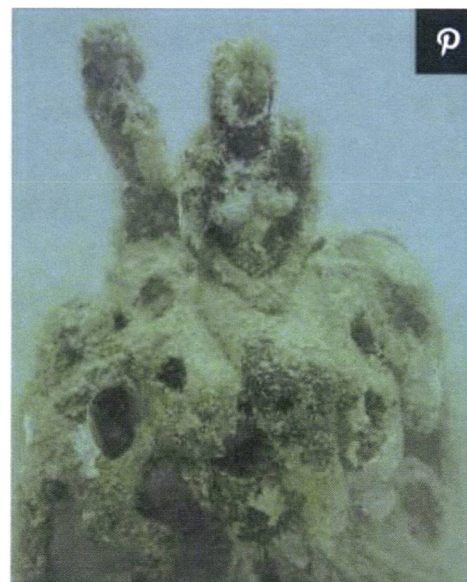
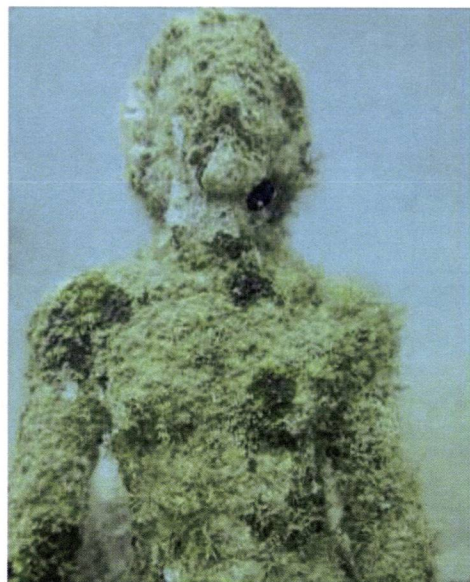
(3) Small Mermaids

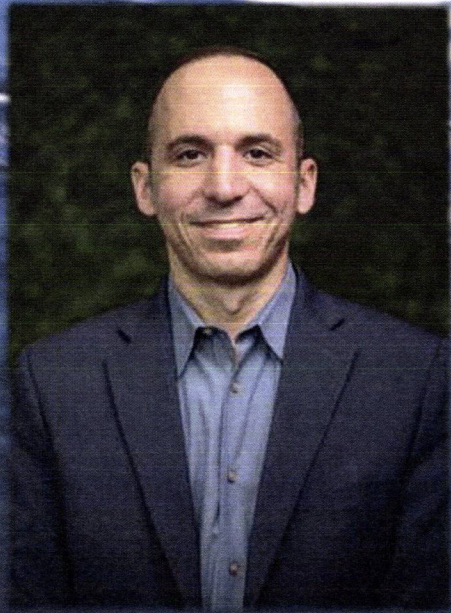


You Could Be Transformed Into a Mermaid Sculpture for an Artificial Reef in Florida

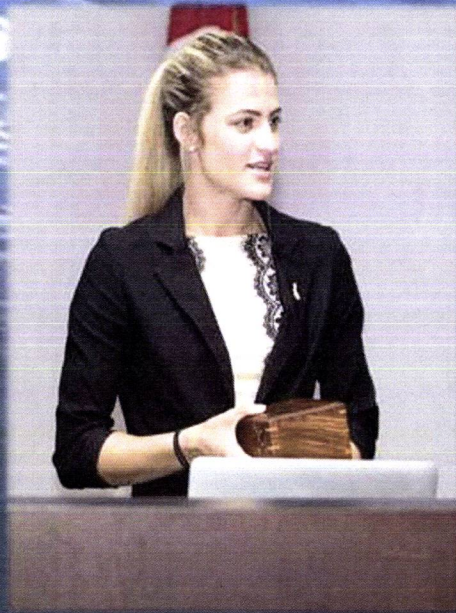
Here's how a rejected nude sculpture became a mission to plant 1,000 mermaids underwater.

BY **SKYE SHERMAN** AUGUST 21, 2020





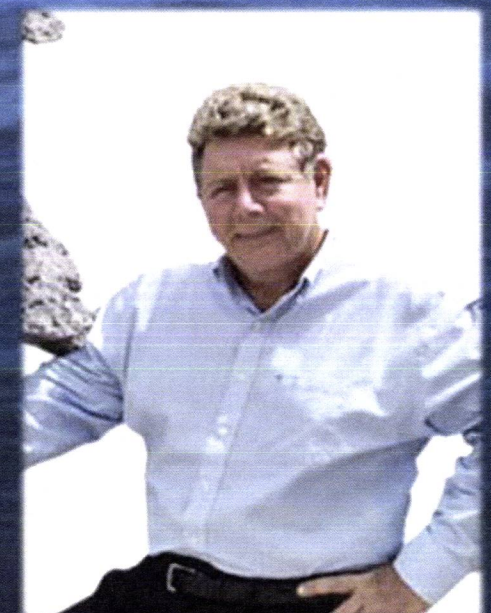
Evan Snow
Executive Director



Shelby Thomas
COO & Director of Research



Stacy Brown
CFO & Director of Education



Chris O'Hare
Project Engineer & Reef Builder

ORA Team

Project Contact Information



Website: www.Oceanrescuealliance.org

Email: info@oceanrescuealliance.org

Create A Reef . Volunteer . Dive . Donate

CORAL LOK™
by
ReefCells.org