***LEE E. HARRIS, Ph.D., P.E.*** ***310 Ormond Ave.***
***Consulting Engineer*** ***Indialantic, FL 32903***
Office: Division of Marine & Environmental Systems, Florida Institute of Technology, Melbourne, FL 32901 Phone: 321/674-7273 FAX: 321/674-7212 Email: Lharris@fit.edu

**Date:** Oct. 2, 2002
**Subject: Monitoring Report for Mitigation Nearshore Artificial Reef Site "B"**
**Location:** Approximately 1000 ft. offshore Stuart, Florida - Virginia Forest Beach
Confirmed GPS coordinates **N27 13.553 / W80 10.647** at the center of the reefsite
**Crewmembers:** Project Director Lee Harris, Ph.D., Boat operator Capt. Leon Morrison, Lead diver Kerry Dillon
**Project Date:** July 23, 2002

The following is a field report to document as found conditions on the nearshore mitigation reef "B" the middle of three such reefs in Martin County. The report will address two types of data collected: Fishlife species identification and quantity, and reef components stability.

## HISTORY OF NEARSHORE REEF "B"

To offset some damage that may have occurred during past beach renourishment projects, Martin County has created three nearshore mitigation artificial reefsites. These are localized reefs that were constructed during the summer of 2000. Materials utilized were from dismantled concrete and steel components from the old Evans Crary Bridge. Larger sections were placed in the Ernst permitted offshore reefsite while smaller sections were specifically targeted to be utilized for mitigation nearshore reefsites.

Nearshore reef B was constructed on 7/28, 8/2, 8/10, 8/28 & 9/5 2000 with five total bargeloads of the following materials:

- 115 concrete piles from 20 – 40 ft. long each
- 20 concrete pilecaps approx. 30 x 4 x 5 ft. each
- 15 steel/concrete roadway sections approx. 40 x 5 x 4 ft. each

These materials were deployed from an unanchored barge around several temporary surface buoys placed just east of the natural reefline in the flat sandy areas approximately 1000 feet east of the beach. Water depths to natural bottom was from 16 – 24 ft. deep and shallowest spot to the top of the reef components was 7 ft. with the average being 12 – 15 ft.

## FISH SPECIES & ABUNDANCE FINDINGS:

Fish identification and abundance was determined utilizing the guidelines setup by The Reef Environmental Education Foundation, known as *REEF*. The roving diver method was used for a set time period of 30 minutes. The divers would roam around the reef structure and identify species and abundance and record data on underwater slates. Data would be double-checked once topside using field texts with color photographs and then transferred to the *REEF* data sheets to be added to their worldwide database. Underwater video and digital still photographic documentation was also utilized to accurately document fish species and abundance. Below are the results of those findings:

***LEE E. HARRIS, Ph.D., P.E.*** ***310 Ormond Ave.***
***Consulting Engineer*** ***Indialantic, FL 32903***
Office: Division of Marine & Environmental Systems, Florida Institute of Technology,
Melbourne, FL 32901 Phone: 321/674-7273 FAX: 321/674-7212 Email: Lharris@fit.edu

| **Marine species identified** | **Quantity observed** | **Juvenile or Adult** |
|---|---|---|
| Porkfish | > 20 | mixed |
| Grey snapper | > 10 | A |
| Sheepshead | 4 | A |
| Lane Snapper | 3 | J |
| Beaugregory | 4 | J |
| Spottail pinfish | > 10 | A |
| Tomtate | 100's | A |
| Common Snook | 2 | A |
| Atlantic Spadefish | > 10 | A |
| Highhat | 4 | J |
| Sergeant Major | 1 | A |
| Doctorfish | 3 | J |
| Doctorfish | 1 | A |
| White Margate | 1 | A |
| Spiny Lobster | 1 | A |
| French Angelfish | 1 | J |
| Barracuda (2 ft.) | 1 | J |
| Gray Triggerfish | 1 | A |
| Two spot cardinalfish | 3 | A |
| Hairy Blenny | 4 | A |
| Spotted goatfish | 2 | A |
| Spotted moray eel | 1 | A |

**REEF COMPONENTS STABILITY:**

In concert to what was seen at sites A & C most all components are still close to the same position as when first deployed in the summer of 2000. It can be assumed that some shifting has occurred during large ocean swell events although without plotting each individual piece of material and tracking it over time that cannot be accurately determined. The same divers have been utilized for the last two years and no one has seen any quantifiable movement of materials. The individual piles that settled horizontally on the flat sandy bottom have been partially buried into the sand. The worst observed at site B is about 50% covered. It is known that the sands in this area have a history of shifting seasonally so it is felt that some of the lower profile components may at times bury then become exposed again, mimicking nearby natural reefs. Many of the components that stacked on top of each other appear to be quite stable providing many overhangs and crevices which are providing excellent habitats for a variety of marine organisms.

***LEE E. HARRIS, Ph.D., P.E.*** ***310 Ormond Ave.***
***Consulting Engineer*** ***Indialantic, FL 32903***
Office: Division of Marine & Environmental Systems, Florida Institute of Technology,
Melbourne, FL 32901 Phone: 321/674-7273 FAX: 321/674-7212 Email: Lharris@fit.edu

**CONCLUSIONS:**

It is obvious to this observer that this nearshore site has become an active living artificial reef community for both fish and benthic organisms while helping to stabilize the fragile sandy substrate off the nearshore areas of Stuart, Florida. The underwater video and still photography document these findings visually.

**CERTIFICATION:**

This written field report narrative of the underwater inspection of the nearshore artificial reef Site "B" is true and accurate to the best of my knowledge and belief.

_____ Date: October 2, 2002

Lee E. Harris, Ph.D., P.E., On-site Observer
Consulting Engineer, FL PE # 26252