



Coastal Eco-Group, Inc.

665 SE 10th St. Suite 104
Deerfield Beach, FL 33441
(954)591.1219 Phone • (954)653-2981 Fax
www.coastaleco-group.com

June 25, 2018

Mr. Robert Weber, Coastal Program Manager
Town of Palm Beach Public Works Department
951 Old Okeechobee Road
West Palm Beach, FL 33401

**Re: Proposal for Port of Palm Beach Berth 1 Orphan Coral Harvest and Relocation-
Town of Palm Beach Mid-Town Coral Nursery Mitigation, FDEP Permit
Modification No. 0164713-010-JN**

Dear Mr. Weber:

Coastal Eco-Group is pleased to provide the Town of Palm Beach with the following proposal for the harvest and relocation of orphan corals from the Port of Palm Beach Berth 1 seawall to the Town's 0.8-acre mitigation artificial reef. The 0.8-acre mitigation artificial reef has served as the Town's coral nursery mitigation receiver site for the Mid-Town Coral Nursery Program since 2013 (FDEP Permit Mod. No. 0164713-010-JN). This proposal is being submitted to the Town on a Time and Materials – Not to Exceed basis for the services as described herein.

This proposal has been divided into two tasks. Task 1 is the harvest and relocation of all corals greater than 10 cm in diameter to the 0.8-acre mitigation artificial reef. The Port of Palm Beach is required under their USACE permit to relocate all corals greater than 10 cm in diameter from the wall at Berth 1. Site surveys conducted on March 22, 2017 suggest that there are approximately 300 corals greater than 10 cm in diameter which require relocation by the USACE (**Table 1**). There is no State requirement for coral relocation associated with the Berth 1 seawall.

Table 1. Number of colonies by species and size class observed estimated for the entire length of seawall at Berth 1 based on transect density calculated from transects and area of seawall.

Species	Transect Count of Colonies			Estimated No. of Colonies		
	<5 cm	6 - 10 cm	> 10cm	<5 cm	6 - 10 cm	> 10cm
<i>Madracis decactis</i>	0	3	4	0	17	23
<i>Cladocora arbuscula</i>	1	0	0	6	0	0
<i>Oculina robusta</i>	35	73	48	199	415	273
<i>Phyllangia americana</i>	0	2	3	0	11	17
<i>Total Coral Density</i>	36	78	55	205	443	313

Task 2 is the harvest and relocation of all corals between 3 and 10 cm in diameter to the 0.8-acre mitigation artificial reef. Based on the Town's previous work on coral transplantation, and recent studies in southeast Florida, corals and fragment of corals in this size class are acceptable candidates for transplantation. Additionally, histology work conducted on the Slip 3 corals indicated that *Oculina* spp. and *Madracis decactis* as small as 3 cm were reproductive. The March 2017 survey indicated that there may be as many as 600 colonies available for relocation (**Table 1**).

A 4-person scientific dive team plus boat operator will harvest and transplant the corals. It is estimated that the harvest and transplantation effort for Task 1 will take five (5) days for field activities including collection, relocation, and colony documentation (species and maximum diameter only), and the effort for Task 2 will take ten (10) field activities. Corals will be harvested by divers using hand tools (ie. hammer and chisel). Divers will carry two weighted bins to separate harvested corals by size class. Because most of the corals are thin, encrusting forms, fragmentation is expected. Additionally, not all corals will be candidates for transplantation due to colony health. Based on the results of the Year 1 effort from corals harvested from Slip 3, survival of fragments of *Madracis decactis* and *Oculina* spp. that are 3 cm in diameter and higher is expected to be high. Type II Portland cement or underwater epoxy shall be used to reattach the colonies at the nursery site depending on the size of the donor colonies.

The total estimated cost for Task 1 is **\$29,442**, and the total estimated cost for Task 2 is **\$52,436**. These efforts include colony documentation (species, maximum diameter, number of fragments, and still photography) immediately after transplantation. Report preparation and long-term monitoring will be done under a separate authorization for the Mid-Town coral nursery.

Thank you for the opportunity to work with the Town of Palm Beach. Please contact me at 954-591-1219 or via email at cmiller@coastaleco-group.com if you have any questions regarding this proposal.

Sincerely,



Cheryl L. Miller, President
Coastal Eco-Group, Inc.