February 13, 2008

Proposal for Barry Richer
South Sound – Grand Cayman
19°16'14.99"N, 81°22'10.00"W

Dear Barry,

Please find hereafter the two options for your property's waterfront.

Option 1:

The first option would involve a small submerged breakwater of reefballs in front of your property's waterfront and two patches of mangrove at each end (see file in attachment). The breakwater would provide a direct protection of your shore, preventing further erosion, and would also allow the beach to replenish rapidly. Moreover, it would provide a habitat for a rich underwater fauna and flora. You can see an example of Reef Ball submerged breakwater at the Marriott Beach Resort.

For the mangrove patches situated at each end of your property, two different planters' types would be used. The first planters' type, the armored cultivator pots, on the edge of each patch would protect the mangroves from wrack thanks to the built-in wrack protector, providing a shield for each propagule (seed) from waves, floating debris, wind, upland runoff, predation and UV, avoiding the troubles that most often cause plant failures in high energy zones (you can find more details about the armored cultivator pot on our website: http://www.mangrovesolutions.com/product.php). After a few years of growth, these wrack protectors can be safely removed once the trees are strong enough to sustain potential floating debris. The base of each planter will be made of a concrete base allowing the propagule & roots to be protected from submerged debris.

The inside of each patch would be formed by 1.5 years old trees. A concrete base will also protect each of these seedlings from floating debris and wave energy. These mangroves, more fragile as they would not be protected from floating wrack, need to be placed in the inside of each patch to benefit from the protection of the first row of planters. However, these more mature trees would offer a direct aesthetic benefit.

This project would require a fair amount of coastal engineering to ensure the breakwater to be properly set up. After 5-10 years, the mangrove will fully develop and provide a rich ecosystem in addition to supplementary shore protection.

The total cost of this project is estimated between $21.220 and 27.220 + expenses.

Details of the costs:

- 2 days of initial site survey and report writing - $3.600 + expenses
    - Dr Harris, P. En. @ $1.250/day
    - Dr Jadot, PhD @ $550/day
- Breakwater – number and size of reefballs needed will vary in function of the site specificity, estimated cost $10.000 – 15.000
- Mangrove patch – estimated cost between $3 420 and $4 420
    - 25 Armored cultivator pots - prize will vary between $60 and 100, depending on the type of soil and the type of anchor needed -$1500–2500
    - 16 1.5 years old mangrove trees in reefball protector @ $120, $1920
- Installation, ReefBall team of 3 person for 4 days: $4200 + expenses
    - Dr Jadot, PhD @ $550/day
    - ReefBall Team members @$250/day

Option 2:

The second option we would like to propose you is two patches of mangroves at each end of our property's waterfront, without the submerged breakwater.
In this case, the mangroves would provide shore protection, but not directly and several years would be needed to allow them to grow and develop their roots system. We would use the same combination of planters in order to provide wrack protection and a direct aesthetic benefit.

The total cost of this project is estimated between $9.220 and 10.220 + expenses
Details of the costs:

- 2 days of initial site survey and report writing - $1.600 + expenses
    - Dr Jadot, PhD @ $550/day
    - Ben Chisholm, @ $250/day
- Mangrove patch – estimated cost between $3 420 and $4 420
    - 25 Armored cultivator pots - prize will vary between $60 and 100, depending on the type of soil and the type of anchor needed -$1500–2500
    - 16 1.5 years old mangrove trees in reefball protector @ $120, $1920
- Installation, Reefball team of 3 person for 4 days: $4200 + expenses
    - Dr Jadot, PhD @ $550/day
    - ReefBall Team members @$250/day

If you have any further questions about this proposal, or about our technology, please do not hesitate to contact us.

Thank you,

Catherine

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