1) What is the exact goal and expectation of the Breakwater?

Our desired goal is to reduce erosion along the south eastern shoreline of MacDill Air Force Base and promote oyster community development in Tampa Bay.

The eastern shoreline is located close to the main Port of Tampa ship channel, allowing ship and storm generated waves to impact the shoreline. This area is an undeveloped natural shoreline that has important cultural resources, including native American midden sites that have been exposed. The Lo Pro Reef Balls will support the expansion of hard bottom habitats that additionally break down wave energy. Oysters promote water quality by filtering feeding action and provide habitat for many marine species.

It should be noted that the AFB has considered construction of a seawall in the area. Our project is designed to provide a much less intrusive means of wave control as an alternative to hardening the shoreline. Permits for the project have been received from the US Army Corps of Engineers, the Florida Department of Environmental Regulation and the Tampa Port Authority. With the support of Reef Ball, Inc., construction is planned for February and March 2004 to be timed with natural oyster recruitment in Tampa Bay. Reef Balls will be purchased and delivered by Reef Innovations to ensure quality control.

2) What depth will the units be deployed relative to the biological tide line (the place on your dock where marine growth stops)?

The Lo Pro's will be placed with the top rim approximately six inches below mean high water (MHW). This will allow maximum oyster growth on the surface of the units and on the top rim of each dome. This elevation will also keep the Reef Ball fields in the intertidal range, promoting wave attenuation during normal and most storm tides.

3) What is the typical wave climate at the site? What are the maximum waves at the site?

The proximity to the shipping channel and the fetch to the opposing shoreline allow the opportunity for waves to grow. The average wave height is approximately 1 ft. to 2 ft. Storm waves are generally higher in the 2 ft to 3 ft. range. Storms of tropical nature are, of course, significantly higher.

4) Describe the bottom in detail (sand, mud, rock, depth to hard bottom, etc.).

The area that the domes will be placed is generally sandy. The southern project limit contains a finer sand and an underlayment is planned for the units in this area. The underlayment to be used was recommended by Reef Balls, Inc. and installed successfully at a similar project along Bayshore Boulevard in Tampa.

5) What, if any, anchoring methods are you using?

There are four different scenarios planned for the MacDill AFB project as follows:

1 – 100' section of Lo Pro reef balls with interlocking base — 200 units
- 5 rows deep
- estimate 2.5 linear feet per unit
- 100' long and approximately 12.5' wide

1 – 100' section Lo Pro reef balls touching at base — 250 units
- 5 rows deep
- first line of reef balls anchored with rebar into sediments
- 100' long and approximately 10' wide

2 – 100' sections Lo Pro reef balls spaced 3' a part — 200 units
- 5 rows deep
- 100' long and approximately18' wide

2 – 100' Lo Pro reef balls, first row touching at base and — 260 units
- anchored with rebar into sediments
- rows 2-5 will be spaced 3' apart

There are two sections that will use the rebar anchoring technique and one section using the interlocking base. The rest of the units are traditional Lo-Pro reef balls.

6) **Has the design been approved by a certified P.E.?**

Permit applications were prepared and submitted by MacDill Air Force Base to the jurisdictional agencies, with the support and guidance of Tampa BayWatch. Several project reviewers are licensed P.E.'s, but the submittals to the jurisdictional agencies for permit applications did not require a P.E. certification.