ORCHID ISLAND

GOLF & BEACH CLUB

COMMUNITY ASSOCIATION (P.O.A.), INC.

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To: Property Owners Living on Watershed Ponds, Lakes and Estuary

From: Andrew Kostanecki, Architectural Review Committee (ARC)

Date: May 26, 2004

Re: Erosion Control Within Orchid Island

Background

This report relates to erosion control as it applies to the Orchid Island Community.

It outlines ARC recommendations for those properties bordering on the tidal estuary to the west and the various properties bordering on the water retention lakes and ponds inside the property. Properties on the estuary are subject to the twice-daily rise and fall of the tide and to the various creatures that live in salt water. The properties on the water retention lakes and ponds are more stable since changes in the level of the water occur only as the result of rainfall. However, considerable erosion and undermining is visible in these properties also.

The estuary west of Indies Drive does not seem to have an erosion problem since most abutting properties are separated from the estuary by more or less densely planted conservation land. .

The estuary west of White Pelican Circle and Orchid Point Way shows a variety of owner managed shoreline solutions and is subject to obvious erosion as a result of the daily rise and fall of the tide. Some property owners have installed sod covered fabric filled tubes ("geo-tubes"), some are at least partially protected by mangrove and some have done nothing at all to mitigate erosion of their property.

Properties on the Estuary

Property owners along the estuary will notice recently placed pink and blue-flagged stakes and, signs indicating the boundaries of the conservation easement. This work is the result of dialogue between St. Johns River Water Management District and the Developer (Torwest). Pink-flagged stakes indicate the boundaries of the owner's property. The placement of the stakes has been established by GPS survey accurate to within ½" by David Jones & Co. under the employ of the Developer. The area between the pink stakes and the blue flagged stakes delineates an approximately 10' strip of land designated as belonging to the POA. All land or water to the west of the POA strip lies within the conservation easement and shall be so delineated with a warning sign. Signs now improperly placed on owner's properties shall be moved.

Properties on the Watershed Ponds

Owners of homes on the watershed lakes and ponds within Orchid Island are not exempt from erosion problems as considerable undermining of shoreline banks can be observed as a result of the frequent changes in water level following seasonal rainfall variations. The problems of repair and protection of this shoreline are similar to those along the estuary.

Guidelines

Any work that is undertaken in order to prevent erosion of the shoreline must be restricted by the following guidelines:

A. Along the estuary, an owner may install an approved erosion barrier up to the edge of the shoreline with the approval of the POA and the ARC.

B. Along the interior watershed ponds an owner may install an approved erosion barrier up to the edge of the shoreline with the approval of the ARC.

C. Nothing may be installed in the conservation easement at all under any conditions.

D. Nothing in this report should be construed as an endorsement of any particular supplier or contractor. It is hoped that homeowners will group together to develop a common strategy for protecting their shoreline in accordance with an approved erosion protection system.

Candidate Erosion Control Systems

As a practical matter there are three reasonable and attractive candidate erosion control systems; natural vegetation, rip rap and geo-tubes. It should be noted that as a matter of design, the Architectural Review Committee recommends that in

each watershed area only one system should be allowed. A mix of vegetation, riprap and geo-tubes within an area, for example, would not be satisfactory.

Natural Vegetation works well where the plants selected tolerate high water (like the ornamental grasses planted on the sixth hole and along the pond between Caribe Way and the fourteenth hole).

Rip Rap (stone) erosion walls. On the smaller ponds with winding shorelines rip rap may offer the nicest solution to erosion control within the Orchid Island Community. The two ponds on the fourth hole already have riprap walls installed on one property on each pond. These small ponds ideally suit the use of rip rap since they are small enough to inhibit wind driven waves from building up. The ponds along Indies Drive opposite the first and eighteenth holes and on Grove Place along the seventeenth hole would not be good candidates for riprap. It should be noted that riprap is approximately twice as expensive to install as the geo-tube.

Geo-tubes already exist on much of the Orchid Island golf course and a number of homes along the estuary. In general, this system makes the most sense both aesthetically and economically. In addition, along White Pelican Circle and Orchid Point Way (for example), access to the shoreline is limited.

The geo-tube material suppliers refuse to project the life of geo synthetic materials, as there are a number of factors that affect their life. These include exposure to sunlight (ultra violet), abrasion, marine animals (mainly crustaceans), etc. When sod covers geo-tubes from exposure to direct sunlight (ultra violet), a long life can be expected. Where the tubes are exposed, as below the golf course high water line or where nothing at all has been planted, such as adjacent to the ornamental grasses to the west of the first green, the life will be limited.

Anchor Marine (the firm that did the golf course) suggests the use of" Armor Mat", a sacrificial barrier, which would be wrapped around the geo-tubes in the estuary to discourage crustaceans.

Installation would be primarily done from a workboat in the water pumping sand from the lakebed to fill the tubes. In almost all cases, two or three tubes would be used to form a base, fill would even out the grade, and sod (by others) would be used to finish the job. Where there is an existing tube on an adjacent property, the new tube would sleeve over the existing tube to present a continuous smooth shoreline transition.

It might be worth noting that at Johns Island, geo-tubes are being used as the basic method of protecting watershed erosion.

Information provided as a basis for this report has been supplied by:

1. Chris Runge, Association Manager, John's Island Property Association.

2. Tom Daly, Orchid Island Property Manager.

3. Scott McGuire, P.E., Knight McGuire & Associates (Engineers for the Developer).

4. Mark Justice, Representative of the Developer.

5. David Jones, Surveyors.

6. William Billard, Anchor Marine Service. (561) 845-6381 geo-tube installers.

7. Robert C. Smith, Treasure Coast Marine of Vero Beach, Inc. geo-tube installers (772)

562-3400.

8. Jim Christenson, Releaf Trees Inc. (772) 589-0116 riprap installers.

9. Dan Bonn, President, US Fabrics, Geo synthetic fabric suppliers.

10. William Smallwood, President, Flint Industries, Geo synthetic Fabric Systems.