SHORELINES – October 2003

As presented to the Island Review Magazine.

"What lies beneath…"

Hopefully, you are enjoying this latest edition of the *Island Review* in a beach chair with the warm sun beaming, a gentle breeze, and maybe experiencing a beautiful orange sunset with that wonderful sand in between your toes. Besides sun bathing, shell collecting, fishing, good memories, family time, and host of other pleasant experiences; there is one word that most of us subconsciously associate the word beach with – sand. However, have you ever wondered where this luxurious sand comes from and what lies beneath? Actually, the sand you see along the beaches of the Crystal Coast and N.C. have a long and interesting history to say the least.

First and foremost, it is important to realize that there is essentially no "new" beach sand being introduced into the coastal system. The mountains have not delivered sand to the coast for thousands of years. The gradient between the mountains and sea are simply too gentle to transport any new sediment. Thus, our sand budget is in a fixed system and the beach that we enjoy is really part of the overall interaction between eroding beaches, inlets, and capes. Also, our sand is extremely old because no new sand is entering the coastal system.

Possibly even more amazing, is that the layer of beach sand is extremely thin in most places and rests upon underlying frameworks of peat and rock. For instance, the beaches near Onslow Beach (Camp Lejeune) and the beaches of Topsail Island reflect a lot of the underlying and offshore geologic framework of the area. Besides containing fragments of sandy limestone and shark teeth, occasionally you may find large pieces of the fossil oyster called *Crassostrea gigantisima*. This variety of oyster has been extinct for approximately 30 million years but are located just below the surface and occasionally become exposed and wash up on the beach. This "gigantic oyster" was up to 2 feet long! Just think, back 30 million years ago one oyster is all you would need for several bowls of oyster stew.

Bogue Banks on the other hand, may have one of the largest sand volumes of any of the N.C. barrier islands, let alone the whole East Coast. Our adjacent sand body of Cape Lookout serves many purposes including a sheltering effect from wave attack and providing a rich supply of sand to our beaches. Our south-facing orientation is also favorable and has allowed our dominant wind patterns to sculpt the large dunes on Bogue Banks. Some of our oceanfront dunes are over 30 foot high, which is unparalleled in most areas of the N.C. coast.

These little antidotes however really underscore the fact that man-made or induced sand removals should be minimized to all extents possible. There is only a certain amount of sand along the coast that rests as a thin layer along most beaches. Regardless whether our beaches have more or less sand compared to other beaches; dredging, groynes, and jetties either permanently remove or impound sand that robs downdrift beaches of their lifeblood. No sand equals no beach.

A perfect local example of this is our own Morehead City Harbor Navigation Project. On average, a million cubic yards are removed annually from the ocean channel and disposed offshore. Unfortunately, this beach sand rests as a stagnate sand mound and is not incorporated into the beach system. Although the sand budget is partially restored by using dredged material

in the interior shipping lanes for beach nourishment, there is an overall sediment deficit that must be accounted for.

Regardless of where you live or play at the beach, sand management is becoming the number one issue to coastal enthusiasts and managers who are concerned with sustaining a wide, sandy beach for all to enjoy. There are many legislative obstacles to overcome, but we are working diligently with our local constituents, friends from other beach communities across the Country, and our Congressional delegation to make this a reality.