

**SHORELINES – November 2002**  
**As presented to the Island Review Magazine.**

**RIDGES, RUNNELS, & BEACH RECOVERY**

After a large coastal storm, have you ever noticed how flat the beach looks? The beach looks beautiful in its new broad type of shape, but at the same time, it almost gives you an eerie type of feeling. This change is actually caused by the movement of sand from one area of the beach system to another. As larger storm waves recede back to the ocean, they remove sand from the upper beach/frontal dunes and transport this material to the lower beach and offshore areas. Believe it or not, the beach uses this process to permit wave energy to dissipate over a broader, more level surface. In this way, the beach acts as a shock absorbing system – changing with the tides, wind, and waves. If the beach couldn't self adjust during storms, then storm waves could expend most of their energy on a smaller area, causing an even greater change.

However, in some instances the same sand that was lost to sea in a storm slowly marches back to our beaches in a process called “beach recovery”. If the sand lost from the upper beach and frontal dunes during storms remain in the shallow offshore area, fair-weather waves can essentially weld this material back to the beach. This will help the beach to widen, but it will take a longer time for large dunes that were undercut by storms to stabilize and grow. And at other times, the sand removed from a beach during a storm is displaced outside the zone where it can begin its slow crusade back to the beach.

So where does most of this sand live after a storm? As you walk on the beach, you may see swimmers congregating in a specific area located relatively far away from the shoreline. Upon closer inspection, you may even note that some of the swimmers are actually taking a break and are standing in waist-high water. This area is commonly referred to as the offshore bar or “ridge”. The trough between the beach and the ridge is termed a “runnel”. You've probably experienced this yourself on a clam day out on the beach. As we walk from our beach chair and into the water, we slowly enter deeper water that is part of the runnel system. In most cases, the depth of this runnel is well overhead. As we now begin to swim seaward, we come upon the ridge where we can stand up, take a break, enjoy some of the sights, and swim back to shore. In quiet weather periods between storms (usually in the summer), the sand in these ridges slowly moves onshore and welds on to the beach. Fishermen and surfers are constantly monitoring the position of the offshore ridges and runnels to improve their chances of catching some dinner or finding that perfect wave.

We can even see the final stages of this phenomenon right on the beach. During low tide, you may notice a very small runnel filled with water between the shoreline and the last high tide line. This small runnel is formed by a landward-moving ridge in the final stages of filling the runnel and welding itself on the beach. For fun, the next time you're on the beach, try to take note of the ridge located offshore and to keep track of its movement. Maybe take another look at the beach and try to determine whether Bogue Banks is in the process of losing or gaining some of its sand back. But don't forget that for the most part, there is a net loss of sand every year - meaning that our beaches are eroding. The causes of erosion are a complex interplay of storms activity, sea-level movement, and sand supply. The latter most variable is a function of both our natural setting and human-induced manipulations.

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**Beach Commission Update**

A Beach Monitoring and Maintenance Plan for the Town of Indian Beach was presented to the Beach Commission in their September regular meeting. The Plan was prepared by the Shore Protection Office to fulfill the Federal Emergency Management Agency's guidelines and regulations for cost reimbursement to replace sand removed from the beach by a federally-declared disaster event. It is anticipated that a similar plan will be prepared on behalf of Emerald Isle for Phase II and Phase III of the Bogue Banks Restoration Project. The Beach Commission was also notified that a preliminary meeting with the Corps of Engineers to discuss the Brandt Island/Section 933 Project will be taking place on October 1st. A formal meeting with all of the stakeholders is tentatively scheduled for early January 2003. The Beach Commission concluded their meeting with an executive session to discuss the Shore Protection Office.