Full Testimony of Terence J. McGean, PE City Engineer, Ocean City Maryland to Senate Committee on Environment and Public Works, hearing "A Review of the 2011 Floods and the Condition of the Nation's Flood Control Systems"

Good morning, my name is Terence McGean and I have been the City Engineer for Ocean City, Maryland for just over 20 years. I have a degree in Civil Engineer from Texas A&M University and am a Maryland Registered Professional Engineer. The Town of Ocean City is located about a 3 hour drive East of Washington DC on a barrier island on the Atlantic Coast of Maryland. Although the census lists Ocean City's population as only 7,102, we host over 8 million visitors each year and on an average summer weekend our population swells to an estimated 300,000 people. This makes Ocean City the second largest city in Maryland in the summertime. The primary reason for the Town's popularity is the wide, clean, and free public beach that runs along our entire coastline.

Ocean City is roughly 10 miles long and encompasses a total area of just 3.5 square miles. Within that small area we have 28,000 living units valued at over $10 billion dollars. As a barrier island community, our greatest risk is flooding damages from tropical and extratropical storm events. Mother nature's natural storm protection for barrier islands are the systems of beaches and dunes that absorb wave energy and protect the mainland. Since Ocean City's founding in 1875, numerous methods of shore protection measures were installed to protect the resort from storm damage. These included wood and metal seawalls, wood groins, stone groins, and other types of hardened shorelines and engineered structures. None of these projects were very successful. As our beach continued to naturally erode, storm damages became more frequent and costly.

In 1962 Ocean City experienced a devastating Nor'Easter that caused somewhere between $10-$20 million dollars in damage (1962 dollars). That storm was the catalyst for a number of efforts to better protect the City. In 1972 the City adopted a building limit line that firmly restricted development along

the Ocean Front. That restriction has since been adopted into State law. The City also began working with the Corps of Engineers to develop a comprehensive shoreline protection system for the Town.

The best technology available at the time recommended the construction of a series of hundreds of stone groins all along the island. In a partnership with the State of Maryland, three of these groins were installed between 1981 and 1983 at a cost over $1.5 million dollars. While these groins were moderately effective at slowing beach erosion in their immediate vicinity, they provided no immediate storm protection and the cost to fully implement the project was simply unaffordable.

In 1985 Tropical Storm Gloria passed just offshore of Ocean City. The storm destroyed the Ocean City boardwalk, and damaged or undermined the foundations of numerous buildings. With virtually no beach or dune system left after Gloria, Ocean City was at crossroads. It was right around this time that Beach Replenishment was becoming a recognized shore protection strategy and the Miami Beach Project was completed and proving to be very successful. Ocean City, Worcester County, and The State of Maryland entered into a partnership with the US Army Corps of Engineers to study the feasibility of Beach Replenishment in Ocean City. Studies showed that if the beach platform itself could be stabilized, then a positive cost benefit ratio for Federal participation in a shore protection project for Ocean City would occur. To that end the local and State Governments completed what became known as Phase 1 of the Beach Replenishment Project. Using 100 percent local funds, the Ocean City beach was widened in 1988 to create a suitable “foundation” for the Federal Project.

In 1990, the Federal project, formally known as the Atlantic Coast of Maryland Shoreline Protection Project, began construction. The project consisted of construction of 8.3 miles of new sand dune, a 1.5 mile seawall protecting the boardwalk, and a sand “storm berm” along the entire ocean front to protect both structures. The project cost $47.7 million and was cost shared between the Federal and local governments. The project nearly completed in 1991 just prior to a series of Northeast storms including

the infamous “Perfect Storm” that in previous years would have caused extensive damage in the Town. Instead, Ocean City suffered no damages except some lost sand and while adjacent beach communities businesses closed for repairs, Ocean City never missed a beat.

The success of the Beach Replenishment project and the partnership between the Corps of Engineers and the local governments involved continues to this very day. Since the completion of the project there have been no structural damages from ocean flooding. More importantly, there have been no injuries or deaths from storms. Total damages prevented are now estimated at over $330 million. The total project costs including the locally paid for Phase 1 project, initial construction of the Federal Project , scheduled replenishments in 1998, 2002, 2006 & 2010 along with storm repairs total just over $100 million with the Federal share at just over $50 million.

Although the prevented damages numbers are impressive, they don’t tell the whole story. The protection provided by the project and the stability of having a long term Federal commitment has allowed Ocean City to grow as a year round travel destination. In the year prior to the completion of Phase 1 of the Beach replenishment project, the assessable base of Ocean City was $3 billion dollars and the Town economy generated $35 million in Federal tax revenue. Today the assessable base is over $10 billion dollars and over $75 million in Federal tax revenue comes from the City annually. In other words, for an annual Federal investment for shore protection in Ocean City of less than $2.5 million dollars, you preserve over $75 million in annual Federal revenue.

On Saturday August 28, 2011 Ocean City was literally in the eye of the hurricane. The storm event that we had been warned would wipe out Ocean City had arrived. Irene brought 60 mph winds, and 20 foot seas. The storm came during our busy summer season and expecting the worst, we successfully evacuated the Town. When the sun came up Sunday morning I sent out our damage assessment teams. Instead of toppled buildings and destroyed infrastructure, we found some loose siding and a pothole in

a city parking lot. By noon on Sunday our businesses were open and visitors were streaming back into Town leading to one of the busiest Labor Day weekends we have had in years.

In some ways we got very lucky, the storm passed quickly and came through at low tide. But I call your attention to this photograph taken in Ocean City just after Gloria, a storm very similar to Irene. Now imagine we never had beach replenishment. Imagine 25 years of normal beach erosion at 2' per year plus the additional damage that would have been caused by the Nor'Easters in 1991, 1992, 1998 and 2009. That would have been the condition of Ocean City (or what was left of it) as Irene struck. Now look at Ocean City today. This photo shows the exact same area of the beach taken last week.

Hurricane Irene is not the first natural disaster to hit Ocean City and it will certainly not be the last (in fact a week before the hurricane we had the earthquake and two weeks after we had a tornado). Irene served as a reminder that the damages from a hurricane are not limited to the coast. In Ocean City, Irene demonstrated that by recognizing the risks associated with strong storms, then adopting strict buildings codes and investing in effective flood protection measures like the beach replenishment project, the impact from these severe storms can be significantly reduced..

Thanks to Beach Replenishment and the continued commitment of the Army Corps of Engineers to the project, Ocean City was well prepared for Hurricane Irene. On Friday, while everyone else was heading West out of Town, the Corps survey crew was in Ocean City to document the condition of the beach. After the storm on Sunday, when we started letting property owners back in town, one of the first people I ran into was not a resident wondering about the condition of their building, it was Jim Jones with the Corps coming to see how the beach had held up. Happily, all Irene had done was move some sand around a little. No repairs were needed and today the project stands fully ready for the next storm.