



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENGINEERING & CONSTRUCTION

Division of Coastal Engineering

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TO: David Rosenblatt, Assistant Commissioner

FROM: Chris Constantino for Bill Dixon, Director

DATE: September 18, 2018

SUBJECT: Initial Coastal Storm Survey & Damage Assessment
Atlantic Ocean, Delaware Bay and Raritan Bay shorelines
September 8 - 12, 2018 East-Northeast Wind Event

SUMMARY:

After the periodic episodes of wind and wave events that occurred from March through June, climatic conditions along the New Jersey coast settled down for much of the summer. These calmer summer conditions promoted natural beach and dune building processes and allowed for effective beach and dune maintenance efforts to restore most beaches throughout the state. However, several 'hot spot' locations remained vulnerable and as a result the Division of Coastal Engineering (DCE) and the respective municipalities monitor those areas closely and kept in communication if remedial action were needed.

On Saturday, September 8th, the combination of a cold front with areas of low-pressure systems associated with Tropical Storm Gordon slowly moved across the southern part of our region. A high-pressure system near New England coupled with remnants of Gordon to create a pressure gradient that focused strong winds and high seas towards the New Jersey coast. The combination of wind and waves allowed for a period of rough surf. Long period swells from Hurricane Florence added to the impacts by prolonging the duration of elevated surf. By Tuesday, September 11th, the strong winds began to subside, and the seas became less chaotic; however, swells from Florence affected the region until Monday, September 17th. Due to the less chaotic state of the long period swell during this time frame, the effects of erosion decreased except at the 'hot spots'.

At the buoys off the New Jersey coast, northeasterly to easterly winds gusted to over 40 mph with seas up to 14 feet being recorded. Onshore winds at inland reporting stations were recorded near 40 mph during the peak of the event. As a result, surf ranging from 3 to 8 feet developed with greater heights observed around jetties, groins, inlets, and piers throughout the state; the elevated surf conditions have slowly subsided up to the date of this report.

Staff from DCE conducted a town-by-town visual pre-storm survey of the New Jersey coastline on September 7th and post-storm surveys on September 12th and 13th. The results of this assessment are contained in this report. During the compilation of this report, the surf conditions around the state ranged from 2 to 5 feet with easterly winds under 15 mph on the 12th and between 10 mph and 20 mph on the 13th, depending on the location. Hurricane Florence began to dominate the wave conditions from Wednesday, September 12th through Monday, September 17th in the form of long period swells. A detailed summary listed by municipality from north to south is enclosed.

Of the 66 municipalities/beach areas surveyed, 53 were determined to have minor beach or dune erosion, 13 had moderate beach or dune erosion and 0 had major beach or dune erosion. Criteria for determining damage levels are listed at the end

of this report. It should be noted that areas documented as having received moderate erosion from this event are regionalized and not widespread.

Please note that the storm damage assessments found herein were conducted in a rapid time interval with pre-storm and post-storm observations made immediately before and after the event in question. It is often the Division's experience that much of the material eroded from the "dry" beach area has not been lost, but rather redistributed within the beach profile system, such as creation or enlargement of offshore sand bars. Our expectation is that much of material will return to the "dry" beach in time following the storm; this time frame may vary based on several contributing factors such as storm frequency and duration.

LOCATION	INSPECTION NOTES	DAMAGE LEVEL*
PERTH AMBOY	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor
SOUTH AMBOY	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor
OLD BRIDGE	Sloped erosion and redistribution of sand. Some additional vertical erosion of the eastern embankment, up to 4' high. No major incidents or damage observed or reported.	Minor
ABERDEEN	10' – 20' of sloped erosion, 1' - 2' high. Some wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
ABERDEEN CLIFFWOOD BEACH	10' – 20' of sloped erosion, 1' - 2' high. Some wave runup/tide to the upper beach/dune and to the road. Sections of dune erosion.	Minor
KEYPORT	Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
UNION BEACH	10' – 15' of sloped erosion, 1' - 2' high. Some wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
KEANSBURG – BAYSHORE FLOODGATE	Sloped erosion and redistribution of sand. Floodgate closed in accordance to operations manual starting Friday, September 7 th through Friday, September 14 th .	Minor
KEANSBURG (POINT COMFORT)	30' – 60' of scarped beach erosion, 2' – 3' high. Isolated section up to 6' high near the Pier/Point Comfort. No major incidents or damage observed or reported.	Moderate
MIDDLETOWN PORT MONMOUTH	25' – 50' of scarped beach erosion, 1' – 3' high. No major incidents or damage observed or reported.	Minor
MIDDLETOWN BELFORD	Approx. 500' of vertical erosion up to 12' high on the dike at the ferry terminal – some of which was pre-existing. No major incidents or damage observed or reported.	Minor
MIDDLETOWN LEONARDO	Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
ATLANTIC HIGHLANDS	Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
HIGHLANDS	Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
SEA BRIGHT	25' - 75' of sloped erosion, 2' – 3' high. Wave runup on the upper beach, and to the seawall and dune at several locations.	Minor
MONMOUTH BEACH	40' – 60' of sloped erosion, 2' – 3' high. Wave runup on the upper beach, and to the seawall and dune at several locations. Some vertical dune erosion was noted.	Minor
LONG BRANCH	25' – 50' of sloped erosion, 2' – 3' high. Wave runup on the upper beach and to the wall at several locations.	Minor

DEAL	25' – 50' of sloped erosion, 2' – 3' high. Wave runup on the upper beach and to the wall at several locations.	Minor
ALLENHURST	Minor sloped erosion and redistribution of sand. Wave runup on the upper beach at several locations.	Minor
LOCH ARBOUR	Minor sloped erosion and redistribution of sand. Wave runup on the upper beach at several locations.	Minor
ASBURY PARK	30' of sloped erosion, 1' - 2' high. Some additional erosion at convention hall seawall. Wave runup on the upper beach at several locations. Temporary Berm pushed	Minor
NEPTUNE OCEAN GROVE	30' of sloped erosion, 1' - 2' high. Wave runup on the upper beach at several locations. Temporary Berm pushed	Minor
BRADLEY BEACH	30' of sloped erosion, 1' - 2' high. Wave runup on the upper beach at several locations.	Minor
AVON	60' of sloped erosion, 1' - 2' high. Wave runup on the upper beach and almost to the boardwalk at several locations.	Minor
BELMAR	50' of sloped erosion, 1' - 2' high. Wave runup on the upper beach at several locations. Temporary Berm pushed along southern portion of Borough	Minor
SPRING LAKE	30' - 40' of sloped erosion, 1' - 2' high. Wave runup on the upper beach and almost to the boardwalk at several locations. Temporary Berm pushed at northern border of Borough.	Minor
SEA GIRT	50' of sloped erosion, 1' - 3' high. Wave runup on the upper beach and almost to the dune at several locations	Minor
MANASQUAN	50' of sloped erosion, 3' - 4' high. Wave runup on the upper beach at several locations. Temporary Berm pushed at northern border of Borough after survey conducted.	Minor
POINT PLEASANT BEACH	50' of sloped erosion, 2' - 3' high. Wave runup on the upper beach at several locations	Minor
BAY HEAD	25' – 50' of sloped erosion, 3' - 5' high. Wave runup to and into the dune creating vertical cuts at several locations. Rocks exposed at several locations. Dune fencing damaged.	Moderate
MANTOLOKING	<u>North of the beachfill/Lyman St.</u> - 25' – 50' of sloped erosion, 2' - 4' high. Wave runup to and into the dune at several locations. <u>South of Lyman St. (in beachfill area)</u> - 25' - 50' of sloped erosion, 1' - 3' high with some wave runup on the upper beach and to the dune fence at several locations.	Minor
BRICK	25' – 50' of sloped erosion, 1' - 3' high. Some wave runup on the upper beach and to the dune fence at several locations.	Minor
TOMS RIVER NORMANDY BEACH	30' – 50' of sloped erosion, 2' - 3' high, with some scarping of the beach. Wave runup to and into the dune at several locations.	Minor
LAVALLETTE	30' - 40' of sloped erosion, 1' - 2' high. Wave runup on the upper beach and to the dune at several locations.	Minor

TOMS RIVER ORTLEY BEACH	<u>In and out of beachfill area</u> - 25' – 50' of sloped erosion, 1' - 3' high. Some wave runup on the upper beach and to the dunetoe at several locations.	Minor
SEASIDE HEIGHTS	50' - 60' of sloped erosion, 2' - 3' high, with some scarping of the beach. Wave runup on the upper beach and to the boardwalk/dune at several locations.	Minor
SEASIDE PARK	<u>In and out of beachfill area</u> - 40' - 60' of sloped erosion, 1' - 3' high. Wave runup on the upper beach and to the dune at several locations.	Minor
BERKELEY TWP. S. SEASIDE PARK	40' - 60' of sloped erosion, 1' - 3' high. Wave runup on the upper beach and to the dune at several locations.	Minor
ISLAND BEACH STATE PARK	IBSP staff assessing their beaches and facilities. Sloped erosion, wave runup to the dune at locations. Some redistribution of sand on the beach. No major incidents or damage reported to DCE.	Minor
BARNEGAT LIGHT	75' of sloped erosion, up to 5' high. Wave runup on the upper beach and to the dune at several locations.	Minor
LONG BEACH TWP. LOVELADIES	75' of sloped erosion, up to 5' high. Wave runup on the upper beach and to the dune at several locations.	Minor
HARVEY CEDARS	80' – 125' of sloped erosion, up to 5' high. Wave runup on the upper beach and to the dune at several locations.	Minor
LONG BEACH TWP. NORTH BEACH	75' of sloped erosion, up to 5' high. Wave runup on the upper beach and to the dune at several locations.	Minor
SURF CITY	75' – 100' of sloped erosion, up to 5' high. Wave runup on the upper beach and to the dune at several locations.	Minor
SHIP BOTTOM	75' of sloped erosion, up to 5' high. Wave runup on the upper beach at several locations.	Minor
LONG BEACH TWP. BRANT BEACH	75' of sloped erosion, up to 5' high. Wave runup on the upper beach at several locations.	Minor
BEACH HAVEN	<u>Taylor Ave:</u> 75' of sloped erosion, up to 5' high. <u>Belvior Ave:</u> 75' of sloped erosion, up to 5' high. Additional 1,800' vertical dune erosion 4' – 8' high, 10' wide. Wave runup on the upper beach and to the dune at several locations.	Moderate
LONG BEACH TWP. HOLGATE	<u>Nelson Ave:</u> 75' of sloped erosion, up to 5' high. <u>Holgate Ave:</u> 75' of sloped erosion, up to 5' high. Additional 800' vertical dune erosion 4' – 15' high, <u>Washington Ave:</u> 80' of sloped erosion, up to 5' high for 1,000 feet. Additional 1,000' vertical dune erosion 15' high, 30' wide. <u>Wooden Terminal:</u> 50' of sloped erosion, up to 5' high for 1,200 feet. Additional 1,200' vertical dune erosion 10' – 15' high, 25' wide. Wave runup on the upper beach and to the dune at several locations.	Moderate
BRIGANTINE	Minor sloped erosion and redistribution of sand. Wave runup on the upper beach and to the dune at several locations.	Minor

ATLANTIC CITY	<p><u>New Hampshire Ave/Inlet Jetty:</u> Jetty overtopped, ponding still present, beach scarps parallel to jetty, 2' – 3' high, 30' wide. Some additional vertical dune erosion, 2' high. Sand fence damaged</p> <p><u>New Hampshire Jetty to New Jersey Ave.:</u> 40' of sloped erosion, 1' high. Additional vertical dune erosion varying from 2' – 10' high, 2'-3' wide from previous conditions. Additional damages to crossovers & dune grass losses.</p> <p><u>New Jersey Ave to South End:</u> 40' of sloped erosion, 1' – 2' high. Wave runup on the upper beach and to the dune at several locations City wide.</p>	Moderate
VENTNOR	30' of sloped erosion, 1' - 2' high. Wave runup on the upper beach and to the dune at several locations.	Minor
MARGATE	30' of sloped erosion, 1' - 2' high. Wave runup on the upper beach and to the dune at several locations.	Minor
LONGPORT	30' of sloped erosion, 1' - 2' high. Wave runup on the upper beach and to the dune at several locations.	Minor
OCEAN CITY	<p><u>Surf Ave. to 4th St.:</u> 40' of sloped erosion, 1' - 2' high. Additional beach scarps 1' - 2' high, 1' – 3' wide</p> <p><u>4th St. to 6th St.:</u> 40' of sloped erosion, 1' - 2' high. Additional beach scarps 1' – 4' high, 1' – 3' wide. Sand fence intact at time of survey</p> <p><u>6th St. to 16th St.:</u> 40' of sloped erosion, 1' - 2' high.</p> <p><u>16th St. to 59th St.:</u> Minor sloped erosion and redistribution of sand. Wave runup on the upper beach and to the dune at several locations City Wide.</p>	Moderate
UPPER TWP. STRATHMERE	<p><u>Entirety of Upper & Strathmere:</u> 40' of sloped erosion, 1' – 2' high.</p> <p><u>Seacliff Ave. to Seaview Ave.:</u> Additional vertical dune erosion, 12' high, 12' – 14' wide. Wave runup on the upper beach and to the dune at several locations Township wide.</p>	Moderate
SEA ISLE CITY	<p><u>Entirety of City:</u> 40' – 50' of sloped erosion, 1' – 2' high</p> <p><u>38th St. to 42nd St.:</u> Additional vertical dune erosion to the dune, 3' – 4' high, 6' – 8' wide.</p> <p><u>89th to 92nd St.:</u> Additional vertical dune erosion, 8' high by 10' – 12' wide. 89th – 91st St. crossovers closed. Wave runup on the upper beach and to the dune at several locations City wide.</p>	Moderate
AVALON	<p><u>Entirety of Town:</u> 40' of sloped erosion, 1' – 2' high.</p> <p><u>13th St. to 14th St.:</u> 40' of sloped erosion, 1' – 2' high. Additional vertical dune erosion 3' – 4' high, 8' to 10' wide. Wave runup on the upper beach and to the dune at several locations Borough wide.</p>	Moderate
STONE HARBOR	<p><u>Entire town:</u> 40' of sloped erosion, 1' – 2' high.</p> <p><u>123rd St. to south terminal groin:</u> Additional vertical dune erosion 8' – 12' high, 6' – 8' wide. Wave runup on the upper beach and to the dune at several locations Borough wide.</p>	Moderate

NORTH WILDWOOD	<p><u>Hereford Inlet & Surf Ave:</u> 40' of sloped erosion, 1' – 2' high. Stone further exposed and rotation of stones further evident however it is unclear if this is the preexisting state or not.</p> <p><u>2nd Ave. to 8th Ave.:</u> 35' of sloped erosion, 1' – 2' high. Remnant dune eroded furthermore, 4th Street access closed due to erosion.</p> <p><u>8th Ave. to Southern End:</u> 50' of sloped erosion, 1' – 2' high. Wave runup on the upper beach and to the dune at several locations City wide.</p>	Moderate
WILDWOOD CITY	40' of sloped erosion, 1' – 2' high. Wave runup on the upper beach at several locations.	Minor
WILDWOOD CREST	50' of sloped erosion, 1' – 2' high. Forebeach ponding. Wave runup on the upper beach at several locations.	Minor
LOWER TWP. DIAMOND BEACH	50' of sloped erosion, 1' – 2' high. Wave runup on the upper beach at several locations.	Minor
CAPE MAY CITY	<p><u>Poverty Beach:</u> 45' of sloped erosion, 2' – 3' high. Additional 350' of vertical dune erosion 5' – 7' high, 12' – 14' wide.</p> <p><u>Cape May City:</u> 40' of sloped erosion, 1' – 2' high. Wave runup on the upper beach at several locations.</p>	Moderate
LOWER TWP. WEST CAPE MAY	20' of sloped erosion, 1' – 2' high.	Minor
CAPE MAY POINT	25' - 30' of sloped erosion, 1' – 2' high.	Minor
DELAWARE BAY	<p><u>North Cape May/Villas:</u> Minor sloped erosion and redistribution of sand. Wave runup on the upper beach and to the vegetation at several locations. Minor to moderate tidal flooding.</p> <p><u>Del Haven/Pierces Point/Reeds Beach:</u> Minor sloped erosion and redistribution of sand. Wave runup on the upper beach and to the vegetation at several locations. Minor to moderate tidal flooding.</p> <p><u>Dennis Township:</u> Minor sloped erosion and redistribution of sand. Minor to moderate tidal flooding.</p> <p><u>East Point:</u> Sloped erosion and redistribution of sand. Wave runup on the upper beach and to the vegetation. Sand Bags exposed, and temporary berm has been eroded. Minor tidal flooding.</p> <p><u>Heislerville:</u> Minor tidal flooding. No notable erosion or damage. Minor tidal flooding.</p> <p><u>Bivalve (Commercial):</u> No notable erosion or damage. Minor tidal flooding.</p> <p><u>Fortescue:</u> Sloped erosion and redistribution of sand. Wave runup on the upper beach and into the dune. Minor tidal flooding.</p> <p><u>Money Island:</u> Minor sloped erosion and redistribution of sand. Minor tidal flooding.</p> <p><u>Gandy's Beach:</u> Minor sloped erosion and redistribution of sand. Minor tidal flooding.</p> <p><u>Lawrence Twp - (Bay Point):</u> Minor to moderate tidal flooding.</p> <p><u>Fairfield Township (Sea Breeze):</u> Minor to moderate tidal flooding.</p>	Moderate (Fortescue, East Point)

	<p><u>Greenwich Township</u>: Minor to moderate tidal flooding.</p> <p><u>Lower Alloways Creek</u>: Minor sloped erosion and redistribution of sand. Minor to moderate tidal flooding.</p> <p><u>Oakwood Beach</u>: Minor sloped erosion and redistribution of sand. Minor to moderate tidal flooding.</p>	
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*** Damage Levels:**

Major erosion – consists of significant or total beach berm loss and/or significant erosion and scarping of the dunes

Moderate erosion – consists of significant scarping and/or significant sloped erosion of beach berm and/or minor erosion of the dunes

Minor erosion – consists of redistribution of sand within the beach profile or loss of sand without significant scarping or significant sloped erosion