



MEMORANDUM

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
Office of Engineering & Construction

CHRIS CHRISTIE
Governor

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

TO: David Rosenblatt, Administrator
FROM: Chris Constantino for Bill Dixon, Manager
DATE: January 27, 2016
SUBJECT: Initial Coastal Storm Survey & Damage Assessment
Atlantic Ocean, Delaware Bay and Raritan Bay shorelines
January 22 through January 25, 2016

SUMMARY:

Since 2013, many beaches along the Jersey Coast (including the Delaware and Raritan shorelines), have been the recipients of a federal beachfill project or another form of shore protection - a majority of the beachfill projects were previously constructed projects that were renourished, however several are new construction and have either been recently completed, are currently ongoing or have not been constructed. As a result, New Jersey's beaches are in various states, ranging from stable and protective to erosional and vulnerable. Since the September/October 2015 prolonged northeast event, there haven't been any significant events which has allowed recovery to occur - this recovery has been both natural and man-made. There have been, however, several episodes of wave activity that have created periods of larger surf but negative impacts have not been observed with the exception of several hot spot locations and some slowing of the recovery process.

On Friday, January 22, 2016, a robust low pressure system developed off of the Carolina coast - the dynamics supporting this developing low were the ingredients for a dangerous storm. By Saturday, this low pressure was a large and dangerous storm, spreading its impacts from the Carolinas to New England with strong winds and precipitation types ranging from rain to heavy snow. Blizzard conditions battered the upper Delmarva region through New York including New Jersey, with many areas receiving 20 to 30 inches of snow. These blizzard conditions generated high seas, which coupled with the full moon, propagated moderate to large surf and elevated water levels. This resulted in varying levels of erosion along the New Jersey Coast.

During this event, winds from the northeast and north-northeast gusted to nearly 60 mph creating seas as high as 27 feet. These conditions developed surf ranging from 6 to 15 feet with greater heights around jetties, groins, inlets and piers throughout the state. The conditions began to subside on January 24th, 2016.

Staff from the Bureau of Coastal Engineering conducted a town by town visual survey of the New Jersey coastline on Sunday January 24, 2016 and Monday January 25, 2016; the results of which are contained in this report. During the compilation of this report, the surf conditions ranged from 2 to 4 feet, depending on the location and winds were variable. A detailed summary listed by municipality from north to south follows this report. Of the 66 municipalities/beach areas surveyed, 26 were determined to have minor beach or dune erosion, 21 had moderate beach or dune erosion and 19 had major beach or dune erosion. Criteria for determining damage levels are listed at the end of this report.

<u>LOCATION</u>	<u>INSPECTION NOTES</u>	<u>DAMAGE LEVEL*</u>
PERTH AMBOY	No major incidents or damage reported.	Minor
SOUTH AMBOY	No major incidents or damage reported.	Minor
OLD BRIDGE	Sloped beach erosion 1 - 2' high, 20 - 25' wide Small beach remains	Minor
ABERDEEN	No major incidents or damage reported.	Minor
ABERDEEN CLIFFWOOD BEACH	Sloped beach erosion 1 - 2' high, 25 - 50' wide Small beach remains.	Minor
KEYPORT	No major incidents or damage reported.	Minor
UNION BEACH	Sloped beach erosion 1 - 2' high, 25 - 50' wide.	Minor
KEANSBURG	Sloped beach erosion 1 - 2' high, 20 - 25' wide Additional retreat of the previously documented (1/15/16) vertical scarps 3' - 5' high	Minor
KEANSBURG BAYSHORE FLOODGATE	Sloped beach erosion 1 - 2' high, 20 - 25' wide.	Minor
MIDDLETOWN PORT MONMOUTH	Sloped beach erosion 1 - 2' high, 20 - 30' wide. Several sections with vertical scarps up to 1' high.	Minor
MIDDLETOWN BELFORD	Some erosion to the containment dike at the CDF.	Minor
MIDDLETOWN LEONARDO	No major incidents or damage reported.	Minor
ATLANTIC HIGHLANDS	No major incidents or damage reported.	Minor
HIGHLANDS	No major incidents or damage reported.	Minor
SEA BRIGHT	Sloped beach erosion 2 - 4' high, 25 - 75' wide No overwash at opening in wall at municipal lot or adjacent to Highland Bridge.	Minor

MONMOUTH BEACH	Sloped beach erosion Sloped beach erosion 2 - 4' high, 50' - 75' wide. No overwash at opening in wall at Valentine St.	Minor
LONG BRANCH	Sloped beach erosion Sloped beach erosion 2 - 4' high, 25' - 75' wide Some overtopping of bulkheads in Elberon.	Minor
DEAL	Sloped beach erosion 3 - 5' high, 50 - 175' wide	Moderate
ALLENHURST	Sloped beach erosion 2 - 4' high, 20 - 25' wide	Minor
LOCH ARBOUR	Sloped beach erosion 2 - 4' high, 25 - 50' wide	Minor
ASBURY PARK	Sloped beach erosion 7 - 8' high, 60 - 100' wide	Moderate
NEPTUNE OCEAN GROVE	Sloped beach erosion 7 - 8' high, 80 - 110' wide	Moderate
BRADLEY BEACH	Sloped beach erosion 7 - 8' high, 30 - 50' wide Several sections with vertical scarps up to 3' high	Moderate
AVON	Sloped beach erosion 7 - 8' high, 100 - 120' wide.	Moderate
BELMAR	Sloped beach erosion 7 - 8' high, 80 - 100' wide.	Moderate
SPRING LAKE	Sloped beach erosion 7 - 8' high, 70 - 90' wide.	Moderate
SEA GIRT	Sloped beach erosion 7 - 8' high, 60 - 100' wide.	Moderate
MANASQUAN	Sloped beach erosion 7 - 8' high, 80 - 150' wide.	Moderate
POINT PLEASANT BEACH	Sloped beach erosion 8 - 10' high, 80 - 150' wide Dune fence damaged on the south end & water up to dunes.	Moderate
BAY HEAD	Sloped beach erosion 8 - 10' high, 90 - 120' wide Seaward slope and crest of revetment exposed for a majority of the length.	Major
MANTOLOKING	Sloped beach erosion 7 - 8' high, 65 - 100' wide 6 to 15' of steel wall exposed, rock revetment exposed.	Major
BRICK	Sloped beach erosion 10 - 15' high, 90 - 100' wide 4 - 15' of wall exposed for the majority of the length. Some sections of wall were not exposed at Brick Beach 1. 50 - 100' of cap and scour apron damaged on the return at the southern end	Major
TOMS RIVER NORMANDY BEACH	Sloped beach erosion 7 - 8' high, 80 - 100' wide <u>Atlantic Way to 2nd Ave.</u> - 10 - 14' vertical cut in dune, 20 - 25' wide.	Major

LAVALLETTE	Sloped beach erosion 7 - 8' high, 100 - 150' wide entire town <u>Northern end</u> – no dune erosion <u>Brooklyn Ave.</u> – 4 - 6' vertical dune cut <u>Southern End</u> – 12 - 14' vertical dune cut, 15 - 20' wide	Major
TOMS RIVER ORTLEY BEACH	Sloped beach erosion 7 - 8' high, 70 - 80' wide No dunes remain Almost overwashed at 4 th St. Damaged crossover structures	Major
SEASIDE HEIGHTS	Sloped beach erosion 7 - 8' high, 100 - 150' wide Debris was noted.	Moderate
SEASIDE PARK	Sloped beach erosion 7 - 8' high, 80 - 100' wide Some sand fence down in southern end.	Moderate
BERKELEY TWP. SOUTH SEASIDE PARK	Sloped beach erosion 7 - 8' high, 80 - 100' wide	Moderate
BERKELEY TWP. ISLAND BEACH STATE PARK	<u>Per Island Beach State Park staff</u> - Sloped beach erosion 4 - 5' high for the length of the park. Small sections of overwash in the dune system, up 2 - 6' of vertical scarping in dunes for 5 miles Damaged sand fencing & storm debris washed up	Moderate
BARNEGAT LIGHT	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Sporadic dune erosion 7' in height, 12' in width for entire length of town.	Moderate
LONG BEACH TWP. LOVELADIES	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Sporadic dune erosion 4 - 5' in height, 10' wide for entire length of town.	Major
HARVEY CEDARS	Sloped beach erosion 5' in height for a width of 150' for entire length of town. <u>Bergen Ave. to Hudson Ave.</u> – Dune erosion 5 - 6' high, 15' wide <u>Hudson Ave. to Sussex Ave.</u> – Dune erosion 15 - 18' high, 75 - 90' wide – entire eastern slope of dune eroded <u>Sussex Ave. to northern Border</u> – Dune erosion 4' high by 10' wide	Major

LONG BEACH TWP. NORTH BEACH	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Sporadic dune erosion 4' high, 8' wide for entire length of town.	Major
SURF CITY	Sloped beach erosion 5' in height for a width of 150' for entire length of town. <u>25th – 12th St.</u> – Dune erosion 8' high, 12' wide <u>12th St. to southern Border</u> – Dune erosion 4' high, 12' wide	Major
SHIP BOTTOM	Sloped beach erosion 5' in height for a width of 150' for entire length of town. No noted dune erosion.	Moderate
LONG BEACH TWP. BRANT BEACH	Sloped beach erosion 5' in height for a width of 150' for entire length of town. <u>31st – 50th St.</u> – Dune erosion 4 - 6' high, 25' wide <u>57th to 80th St.</u> – Dune erosion 4 - 5' high, 20' wide <u>81st – 132nd St.</u> – No noted dune erosion <u>34th to 17th St. (North Beach Haven)</u> – No dune erosion <u>17th St.</u> – Dune erosion 5', high, 25' width <u>16th St.</u> – Dune erosion 8' high, 35' wide <u>15th St.</u> - Dune erosion 12' high, 50' wide <u>14th -12th St.</u> – Dune erosion 16' high (to top of dune), eastern slope is gone at 12 th St. , width of 70'	Major
BEACH HAVEN	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Few locations noted as dune erosion – 5 - 6' by 20' wide <u>In front of the Shell (Centre St.)</u> - Dune erosion 3' high, 10' wide <u>Pearl St.</u> - Dune erosion 6' wide, 16' wide, 400' in length <u>Belvoir St. to Essex St.</u> - Dune erosion 8' high, 30' wide <u>Holyoke Ave. to Leeward Ave.</u> - water interaction but no dune erosion <u>Leeward/Merivale/Nelson</u> - Dune washed out, overwash noted in adjacent properties, geotube completely exposed. Town plans to truck in sand for the Leeward – Nelson area.	Major

LONG BEACH TWP. HOLGATE	Sloped beach erosion 5' in height for a width of 150' for entire length of town. Dune erosion 12 - 15' high by 20 - 40' wide Minor beaches & overwash for a four block area around <u>Chatham Ave.</u> - Private property damage has been noted in this area. <u>Holgate Natural Area</u> – Possibility of new inlet; appears to be overwash in some areas. Town plans to truck in sand to the Chatham Ave. Area to close up the minor breaches	Major
BRIGANTINE	50 - 75' of sloped erosion 1 - 2' in height throughout municipality. Dune erosion along promenade at north end from Refuge Area to 10 th St 3 - 5' in height. Rocks exposed along Promenade. Stairs damaged at northern end of Brigantine Ave.	Moderate
ATLANTIC CITY	25' - 50' of sloped erosion up to 2 - 3' in height throughout municipality. <u>Absecon Inlet to Revel</u> - about 4' of additional dune erosion 6 - 8' in height. <u>Revel to Showboat</u> - 6 - 8' of additional dune erosion 16 - 20' in height. <u>Oriental Ave</u> - Water rushed through active Corps Seawall project site. 7 - 8' of additional dune erosion 8 - 10' in height. City's timber seawall damaged; potential damage to dwelling landward of this bulkhead	Major
VENTNOR	25 - 50' of sloped erosion up to 2 - 5' in height throughout municipality. Dune erosion 2 - 4' high Dune fence down from Fishing Pier to New Haven Ave. Light down on boardwalk at Swarthmore Ave.	Moderate
MARGATE	25 - 50' of sloped erosion 3 - 4' in height throughout municipality. Erosion along much of the municipality's dunes from Cedar Grove Ave to Benson Ave 3 - 5' in height. Dune fence down along this stretch. Evidence of ocean flooding east of Atlantic Ave. especially at Sumner Ave, Jerome Ave, and Iroquois Ave.	Moderate
LONGPORT	25 - 50' of sloped erosion 3 - 4' in height throughout municipality. Stairs damaged at 23 rd Ave street end.	Moderate

OCEAN CITY	50 - 75' of sloped erosion 1 - 3' in height throughout municipality. Dune erosion from St. James Pl to Moorlyn Terr 4 - 7' in height. Dune fence down along this stretch.	Major
UPPER TWP. STRATHMERE	<u>Corson's Inlet/Ocean Drive Bridge (located inside the inlet)</u> - Downed trees and other debris observed. Loose core stone from the seawall displaced onto road. <u>Natural Area</u> - 200' of sloped erosion up to 2 - 3' in height. 300' of significant sloped erosion on the corner of the planform. <u>Natural Area to Whale Beach</u> - 200' of sloped erosion up to 2 - 3' in height. No dune impact.	Moderate
SEA ISLE CITY	<u>2nd to 40th Street</u> - 175' of sloped erosion up to 2 - 4' in height. Vertical dune erosion up to 10' in height and 3' wide. +/- 150 LF of sand fence down. <u>40th-57th Street</u> - 175' of sloped erosion up to 2 - 4' in height. Vertical dune erosion up to 10 - 12' in height and 4' wide. Crossovers and ADA Ramps damaged. <u>57th-93rd Street</u> - 175' of sloped erosion up to 2 - 4' in height. Minimal Vertical dune erosion.	Major
AVALON	<u>10th - 17th Street</u> - 75' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 12' in height. Loose rocks exposed. <u>17th - 24th Street</u> - 75' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 10' in height and 5' wide. Some damage to crossovers. <u>24th Street and South</u> - 75' of sloped erosion up to 3 - 5' in height.	Major

STONE HARBOR	<p><u>80th – 109th Street</u> - 100' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 12' in height and 15 - 20' wide.</p> <p><u>109th-123th Street</u> - Vertical dune erosion up to 10 - 12' in height and 15-20' wide.</p> <p><u>123rd Street to Groin</u> - Significant vertical dune erosion up to 12 - 15' in height and 25 - 30' wide.</p> <p>Federal dune impacted.</p>	Major
NORTH WILDWOOD	<p><u>Hereford Inlet</u> - 60' of sloped erosion up to 3 - 4' in height. Vertical dune erosion up to 5' in height and 10' wide. Displaced core stone noted from seawall at Hoffman and Mace Avenue & at St. Demetrios Avenue.</p> <p><u>2nd - 15th Street</u> - 225' of sloped erosion up to 3 - 5' in height. Vertical dune erosion up to 5' in height and 10' wide.</p> <p>Some damage to crossovers.</p> <p><u>15th - 26th Street</u> - 225' of sloped erosion up to 3 - 5' in height.</p> <p>Vertical dune erosion up to 10 - 12' in height and 20 - 25' wide.</p>	Major
WILDWOOD CITY	500' of sloped erosion up to 3 - 5' in height. No outfalls excavated prior to storm.	*Minor (due to width of beach)
WILDWOOD CREST	500' of sloped erosion up to 3 - 5' in height.	*Minor (due to width of beach)
LOWER TWP. DIAMOND BEACH	200' of sloped erosion up to 3 - 4' in height. Vertical dune erosion up to 10' in height and 4 - 6' wide.	*Minor (due to width of beach)
CAPE MAY CITY	40' of sloped erosion up to 1 - 3' in height. No dune impact. Minor amounts of sand overwash at Wilmington Ave.	Minor
LOWER TWP. WEST CAPE MAY	30' of sloped erosion up to 1 - 3' in height. No dune impact.	Minor
CAPE MAY POINT	60' of sloped erosion up to 3 - 4' in height. Vertical dune erosion near Lincoln Ave (150LF) up to 8' in height and 4' wide.	Minor

<p>DELAWARE BAY</p>	<p>Minimal sloped erosion observed for entire bayside unless otherwise noted. Moderate flooding observed during high tide in various locations.</p> <p><u>East Point</u> - No damage to lighthouse or other structures.</p> <p><u>Heislerville</u> - No damage to the main dike structure, some scour on the I-5 cross dike.</p> <p><u>Fortescue</u> - Vertical dune erosion up to 2' in height for 3,000 LF. Vertical dune erosion up to 5' for 500 LF. Deck damaged at home near marina.</p> <p><u>Gandy's Beach</u> - Severe sloped erosion. Damage to existing crossovers. Portions of concrete block revetment displaced.</p> <p><u>Money Island</u> - Some sand overwash noted.</p> <p><u>Reed's Beach</u> - 0 - 1' of sloped erosion approximately 25' wide.</p> <p><u>Oakwood Beach</u> - Site of recent USACE beach nourishment project; no issues noted.</p>	<p>Minor</p>
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*** Damage Levels:**

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

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

Minor erosion – consists of loss of sand without significant scarping or sloped erosion