



NJ Department of Environmental Protection  
Water Monitoring and Standards  
Bureau of Marine Water Monitoring

**COOPERATIVE COASTAL MONITORING PROGRAM**  
2016 Summary Report



May 2017

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## **New Jersey Department of Environmental Protection**

Water Resource Management

Division of Water Monitoring and Standards

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**Cover Photo** – New Jersey Coastline (photo by Steve Jacobus, NJDEP)

## Introduction

The Cooperative Coastal Monitoring Program (CCMP) is coordinated by the New Jersey Department of Environmental Protection's Bureau of Marine Water Monitoring. The CCMP assesses coastal water quality and investigates sources of water pollution. The information collected under the CCMP assists the DEP in responding to immediate public health concerns arising from contamination in coastal recreational bathing areas. Agencies that participate in the CCMP perform sanitary surveys of beach areas and monitor concentrations of bacteria in nearshore ocean and estuarine waters to assess the acceptability of these waters for recreational bathing. These activities and the resulting data are used to respond to immediate public health concerns associated with recreational water quality and to eliminate the sources of fecal contamination that impact coastal waters. Funding for the CCMP comes from the NJ Coastal Protection Trust Fund and the United States Environmental Protection Agency (EPA) Beaches Environmental Assessment and Coastal Health (BEACH) Act grants. BEACH Development and Implementation grants were awarded in the years 2001 through 2016. DEP designs the beach sampling and administers the communication, notification and response portion of the CCMP. The majority of the BEACH grant funds are passed through to the four county health agencies participating in the CCMP who perform the weekly sample collection and analysis. The participating agencies are:

Atlantic County Health Department  
Cape May County Health Department  
Monmouth County Health Department  
Ocean County Health Department

Additional assistance is provided by the following agencies:

Atlantic City Health Department  
Long Beach Island Health Department  
Long Branch Health Department  
Middletown Health Department  
Monmouth County Regional Health Commission  
New Jersey Department of Health

As part of this program, DEP routinely inspects the 17 wastewater treatment facilities that discharge to the ocean (Appendix 1). DEP also performs aerial surveillance of New Jersey nearshore coastal waters and the Hudson-Raritan estuaries six days a week (May to September) to observe changing coastal water quality conditions and potential pollution sources.

## CCMP Procedures

Chapter IX of the State Sanitary Code N.J.A.C. 8:26 and the DEP *Field Sampling Procedures Manual* prescribe the sampling techniques and beach opening and closing procedures the agencies use for the CCMP. The agencies perform routine sampling from mid-May through mid-September on Mondays. Samples are analyzed for enterococci concentrations by DEP-certified laboratories using EPA approved methods; analyses provide results within 24 hours of sampling. Counties submit water monitoring data to DEP in electronic format after each sampling event using DEP's web-based Beach Monitoring System. In 2008, DEP began transferring monitoring and beach closing notification data to EPA via the WQX data system.

The CCMP included water quality monitoring at 185 ocean, 18 bay and 10 river stations in 2016. Station locations coincided with recreational swimming beaches. Recreational stations are sampled to assess trends and to protect recreational bathers from elevated levels of bacteria. Most ocean beach monitoring stations are selected because of their proximity to other similar recreational beaches and the lack of specific pollution sources. The sample results from these beaches are intended to evaluate the water quality at several lifeguarded beaches in an area rather than just one lifeguarded beach. Other ocean beaches are assigned

monitoring stations when effects from potential pollution sources are possible. A monitoring station is assigned at each recreational bay beach because of their noncontiguous locations.

All recreational beaches are subject to opening and closing procedures of the State Sanitary Code and therefore, must be resampled when bacteria concentrations exceed the primary contact standard. In the years prior to 2004, the primary contact standard was 200 fecal coliforms per 100 mL of sample. Studies performed by EPA determined that enterococci bacteria have a greater correlation with swimming-associated gastrointestinal illness in marine waters than fecal coliform bacteria. In 2004, the State Sanitary Code was amended to require monitoring for enterococci bacteria with a new primary contact standard of 104 colony forming units per 100 mL of sample. In 2012, EPA released revised recreational criteria for marine beaches. A new Statistical Threshold Value (STV) of 110 colony forming units of enterococci per 100 mL of sample was shown to be most protective. Since New Jersey's current standard of 104 cfu/100 mL is at least as protective as the revised EPA criteria, no change has been made to the New Jersey State Sanitary Code.

Health agencies issue advisories to the public on an initial exceedance of the bacteria standard. Consecutive samples that exceed the standard require the closing of the beach until a sample is obtained that is within the standard. When high bacteria concentrations are recorded, the sampling is extended linearly along the beach to determine the extent of the problem and the pollution source. This "bracket sampling" can result in an extension of the ocean beach closing to contiguous lifeguarded beaches. Resamples are always performed in conjunction with a sanitary survey, which includes identifying possible pollution sources and observing water and shoreline conditions.

Beaches may be closed when bacteria levels exceed the standard or as a precautionary measure in response to an environmental condition, i.e., a heavy rain event or floatables washup. Health or enforcement agencies may close beaches at any time at their discretion to protect the public's health and safety.

## **2016 Beach Actions**

In 2016, one ocean beach closed for a total of 4 days due to a sewage spill that entered an ocean stormwater outfall. There were 10 bay/river closings due to bacteria exceeding the standard. These 10 closings were limited to 7 beaches. Advisories were posted at 75 ocean beaches and 44 river and bay beaches in 2016, up from 20 and 44 advisories in 2015, respectively. The increase in the number of advisories issued in 2016 is directly related to four extreme weather events which were responsible for 84% of the swimming advisories issued at ocean beaches and 100% of advisories issued at river/bay beaches. Following resampling, 100% of the ocean beach advisories were lifted and 77% of bay/river advisories were lifted. Details are discussed in "Coastal Incidents of Note" on page 14.

Beach conditions, advisories and beach closings, and the reasons for beach closings were posted on the DEP web page ([www.njbeaches.org](http://www.njbeaches.org)) each day. Additionally, when beach closings were necessary, the county or local health agency posted "No Swimming" signs at the beach. Signs remained posted until the swimming ban was lifted. Table 1 below presents the numbers of closings and advisories for the last ten years, from 2007 through 2016.

Table 1: Numbers of Ocean and Bay Beach Actions

<b><u>Ocean</u></b>	<b><u>2007</u></b>	<b><u>2008<sup>2</sup></u></b>	<b><u>2009</u></b>	<b><u>2010</u></b>	<b><u>2011</u></b>	<b><u>2012</u></b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>	<b><u>2016</u></b>
closed for bacteria	0	1	6	0	3	3	0	5	2	3
precautionary closing	85	45	111	64	84	67	80	15	2	1
# Rainfall Provisional Beaches	4	4	4	4	4	4	4	0	0	0
closed for floatables	4	120 <sup>1</sup>	0	0	0	103 <sup>3</sup>	0	3	0	0
advisories <sup>2</sup>	n/a	n/a	7	17	15	10	3	12	20	75
Total ocean beach actions	89	158	117	81	102	183	83	35	24	79
<b><u>Bay &amp; River</u></b>	<b><u>2007</u></b>	<b><u>2008</u></b>	<b><u>2009</u></b>	<b><u>2010</u></b>	<b><u>2011</u></b>	<b><u>2012</u></b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>	<b><u>2016</u></b>
closings for bacteria	35	30	32	7	8	13	8	1	18	10
precautionary closing	18	13	24	20	21	4	0	2	0	0
# Rainfall Provisional Beaches	1	2	2	2	2	2	2	2	1	0
closed for floatables	0	0	0	0	0	0	0	0	0	0
advisories <sup>2</sup>	n/a	n/a	0	1	3	48	15	19	40	44
Total bay beach actions	53	43	56	27	30	65	23	22	58	54

Note: Precautionary rainfall beach closing policy at the four ocean beaches surrounding the Wreck Pond outfall from 2007-2013. The policy was removed at these ocean beaches beginning in 2014.

1 A criminal medical waste dumping event was responsible for 120 ocean beach closings

2 Monmouth County health agencies added swimming advisory policies late in the 2009 bathing season. In 2012, Ocean County also began issuing bathing advisories.

3 An unusually heavy rain event in the New York Harbor area the previous week caused combined sewers in New York and northern New Jersey to overflow into shared waters. Trash and debris from this event is the probable cause of the washup on Long Beach Island.

Most ocean closings prior to 2014 were precautionary due to concerns of nonpoint pollution transported by stormwater during rain events at Wreck Pond in Monmouth County. Thus, the four surrounding beaches were closed after every 0.1 inch of rainfall in a 24-hour period. Source trackdown and other remedial work performed around the Wreck Pond outfall in recent years (see below) allowed the towns, health agencies and NJDEP to agree that this rain-provisional policy was no longer required.

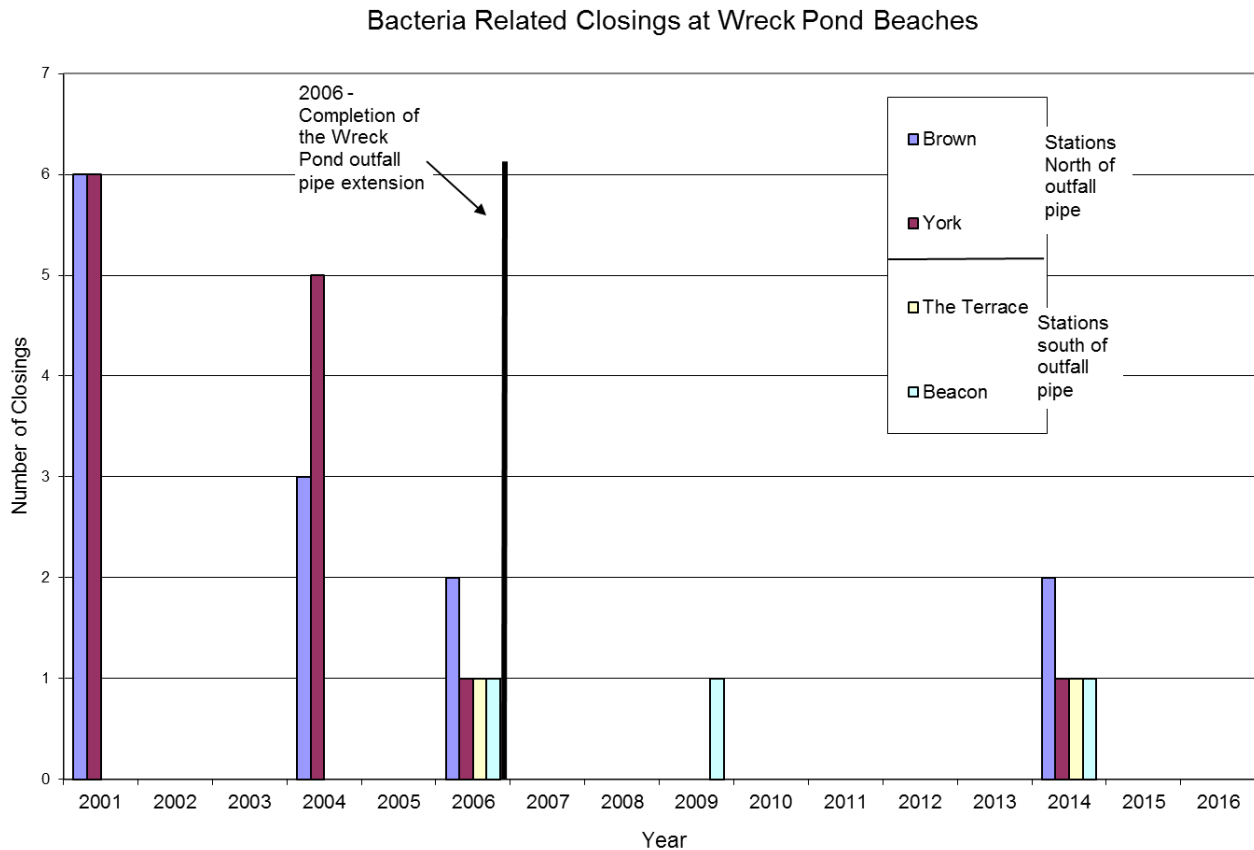
Beach closings due to wash ups of floatable debris have been uncommon. In 1990, floatable debris was responsible for a total of 10 separate beach closings. In the following 12 years, no closings were due to floatables; however, in 2003, 13 separate closings and, in 2007, four closings were due to reported wash ups of trash and debris. In 2008, a criminal medical waste dumping event was responsible for 120 ocean beach

closings. In 2012, approximately 50 syringes along with other floatable debris washed onto beaches on Long Beach Island closing 12 miles of beaches for one day. In 2014, three ocean beaches were closed on one day due to a reported wash-up of trash. There were no beach closings caused by floatable debris in 2015 and 2016. Bay beaches are rarely affected by washups of floatable debris.

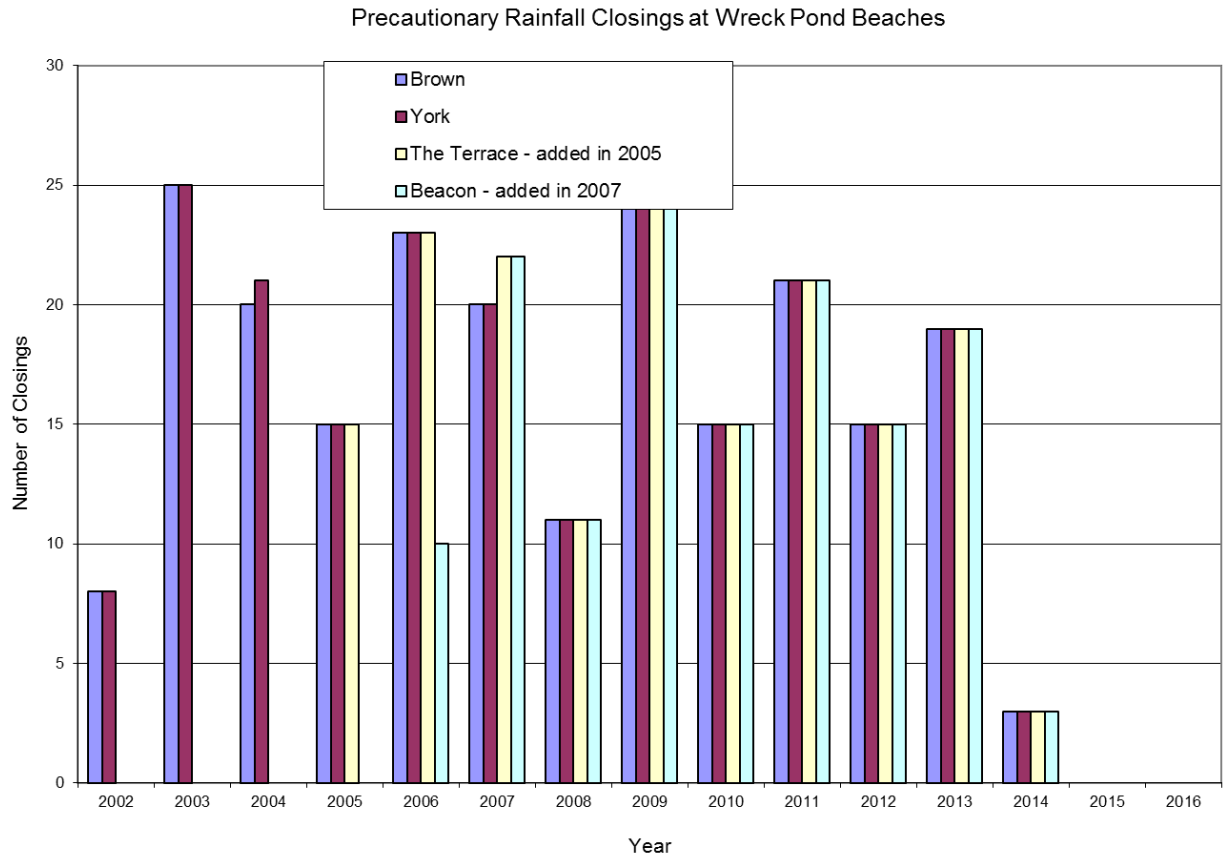
The CCMP does not record closings related to rough seas, beach maintenance projects, shark sightings, and fish and clam wash ups. The CCMP also does not include those closings that are briefly in effect during the assessment of water conditions by local officials. Only those beach closings ordered by local health officials are included.

In 2002, a precautionary beach closing plan was implemented in Spring Lake Borough, Monmouth County. It required that the two beaches north of the Wreck Pond outfall, Brown Avenue and York Avenue, automatically close for 24 hours after all rainfalls greater than 0.1 inch, and for 48 hours after all rainfalls greater than 2.8 inches within a 24-hour period. In addition, lifeguards (or staff as designated by Spring Lake Borough) could prohibit swimming near any parts of these beaches where the stormwater plume was observed to be mixing within the swimming area. In 2005, the Terrace beach and, in 2007, Beacon Boulevard beach, both beaches in Sea Girt just south of the Wreck Pond outfall, were added to the precautionary beach closing plan. These precautionary beach closings were considered more protective of public health since there was no need to wait for laboratory results from water quality sampling, and the bathing public was protected from exposure to potentially contaminated stormwater. Beginning in 2002, two ocean beaches and two bay beaches in Monmouth County were identified as rain provisional beaches. By 2007, two additional ocean beaches had been added to the provisional beach closing policy, which accounts for the increase in beach closing numbers at ocean and bay beaches.

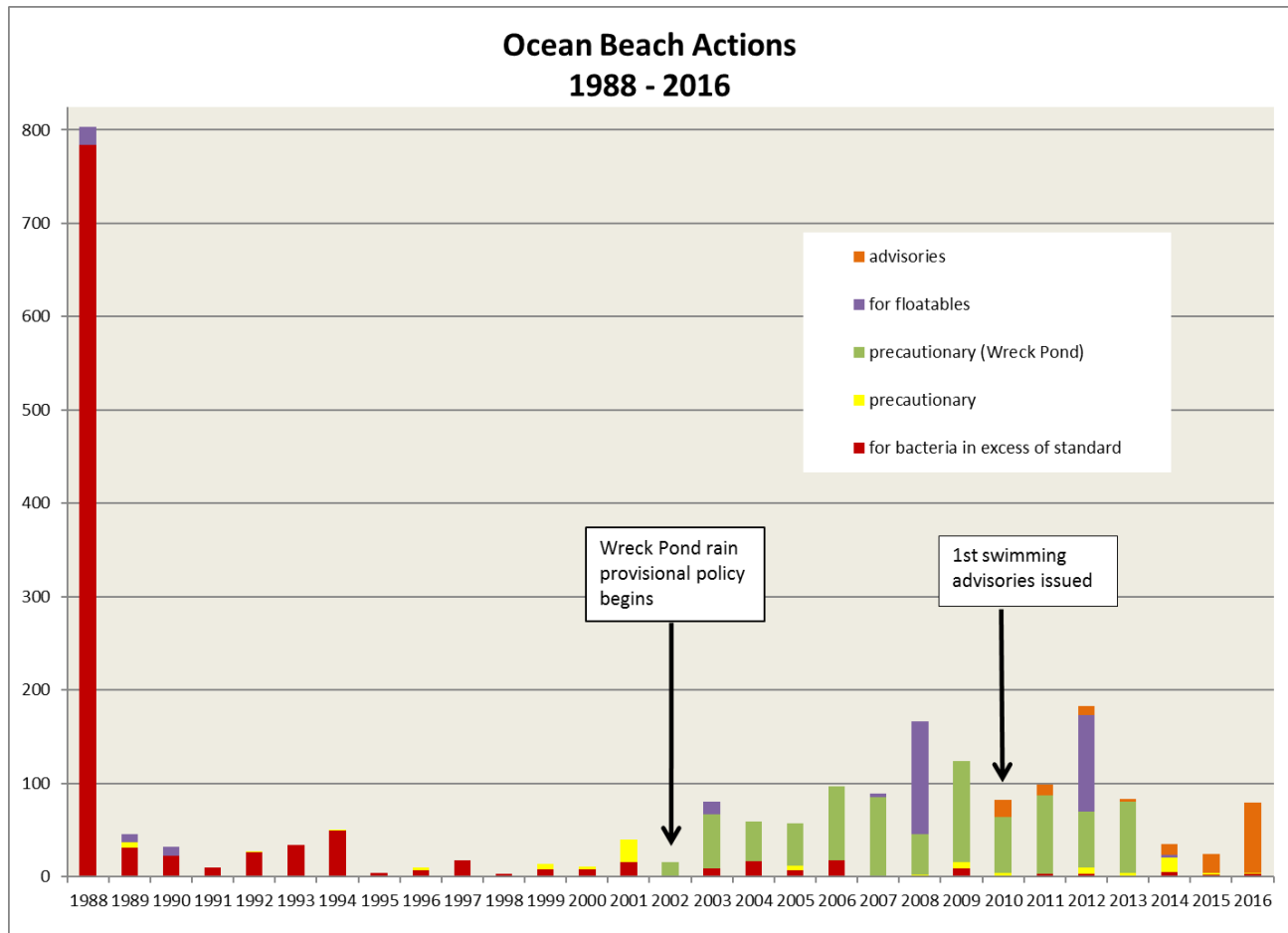
Intensive trackdown efforts identified that sources of pollution to Wreck Pond included stormwater discharges directly to the pond and failing infrastructure in the community surrounding the pond. These factors contributed to the elevated levels of enterococcus bacteria discharge to the ocean during rain events. DEP along with its partners, has implemented remedial actions to alleviate these sources of contamination. In 2006, DEP completed a 300-foot extension to the Wreck Pond ocean discharge outfall pipe to increase mixing further out into the ocean to reduce the impact on bathing beaches. This resulted in a decrease in beach closings related to bacteria (Figure 1), however, the total number of beach closings at the four “rain provisional” beaches vary (Figure 2) dependent on the amount of rainfall in any given summer season. DEP reinstated wet-weather monitoring at the four Wreck Pond beaches during the 2012 beach season and continued sampling in the off season and during the 2013 and 2014 beach seasons. DEP, Spring Lake, Sea Girt, Monmouth County Health Department, Monmouth County Regional Health Commission and Clean Ocean Action reevaluated the provisional rainfall closure policy at Wreck Pond and determined that the data does not support the rainfall closure policy. From 2006 through 2013, the precautionary rainfall policy at the four Wreck Pond beaches required 595 beach day closings in Spring Lake and Sea Girt; however, in this same period only one beach was closed due to an actual exceedance of the bacteria standard (Beacon Blvd. beach in 2009). Infrastructure improvements and analysis of water quality data supported the decision to remove the rain closing policy beginning with the 2014 beach season. In 2014, two large storm events required Spring Lake to open the emergency spillway between Wreck Pond and the ocean, resulting in 12 precautionary beach closings and 5 closings due to an exceedance of the bacteria standard. In 2014, there were no other closings at the four beaches surrounding the Wreck Pond outfall which, since 2002, had accounted for most of NJ’s ocean beach closings. There were no water quality beach closings in 2015 or 2016 at the four beaches surrounding the Wreck Pond outfall.



**Figure 1.** Beach closings caused by bacteria exceeding the standard at the four beaches surrounding the Wreck Pond outfall in the years 2001 - 2016. In 2014, two extreme storm events required emergency opening of the spillway between Wreck Pond and the ocean, allowing stormwater to discharge directly to the bathing area.



**Figure 2. Beach closings at the four "rain provisional" beaches surrounding the Wreck Pond outfall in the years 2002 - 2016. The rainfall closing policy went into effect in 2002. Beacon Beach had rain provisional closings in 2006 but was not officially added to the policy until 2007. The policy was eliminated beginning with the 2014 beach season but the beaches were closed as a precaution following two extreme weather events requiring emergency discharge. There were no water quality closings in 2015 or 2016.**



**Figure 3. Trend in NJ ocean beach actions.**

Figure 3 shows that closures at New Jersey's ocean and bay beaches due to exceedances of the water quality standard are low. However, in the years prior to 2014, the overall number of closures was up at ocean beaches primarily due to precautionary rainfall closures since 2002, the criminal medical waste dumping event in 2008 and the one-day floatable washup in 2012. These precautionary closures represent an enhanced level of public health protection that has been implemented by county and local health officials with the support of DEP. Even with precautionary closures, New Jersey beaches were open to bathing over 99.9% of the time in 2016 (Figure 8). With nearly 600 ocean and bay beaches, New Jersey has more recreational beaches than any other state on the east coast.

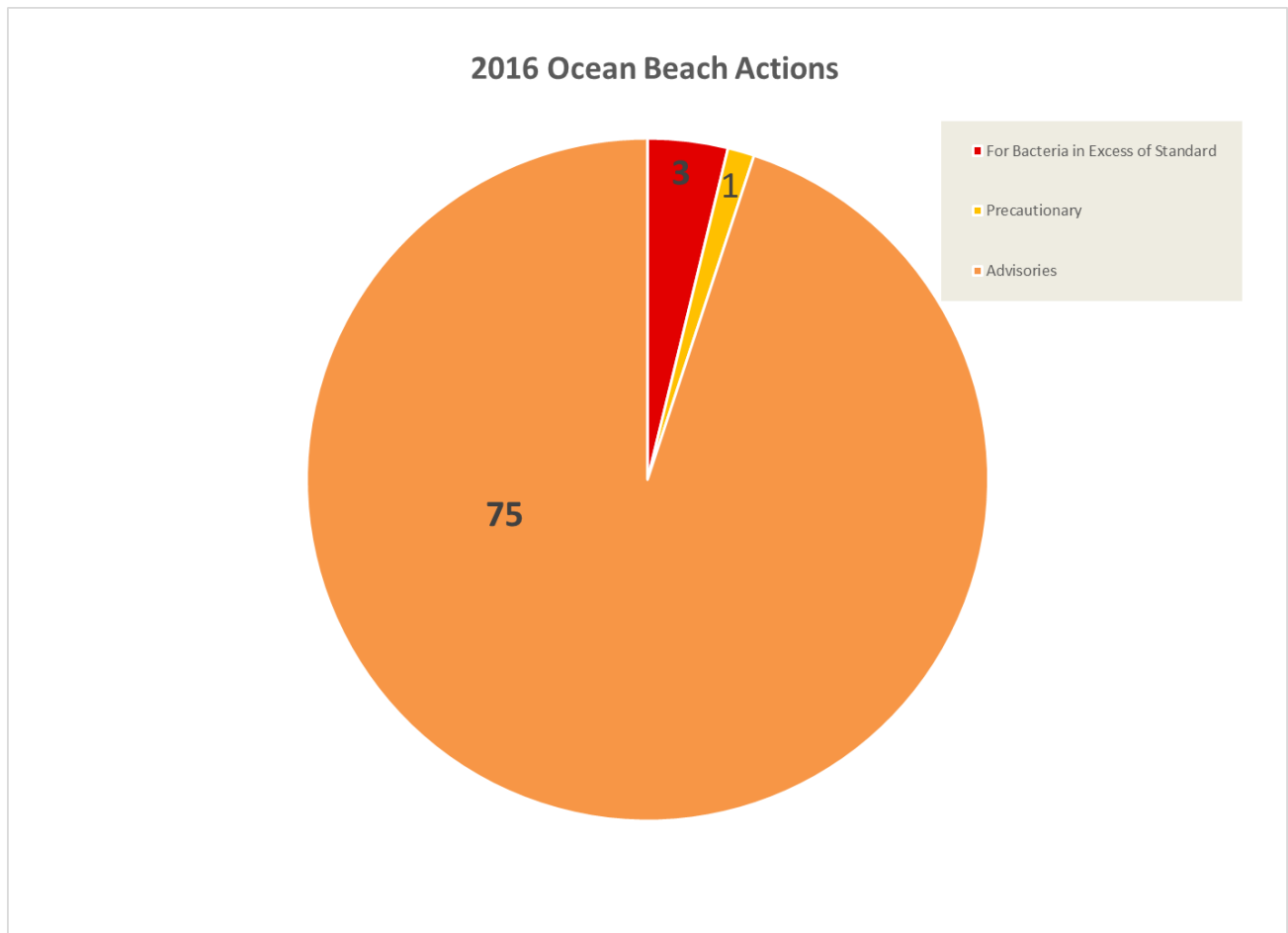


Figure 5. 2016 Ocean beach actions: Total number of actions and reason for action.

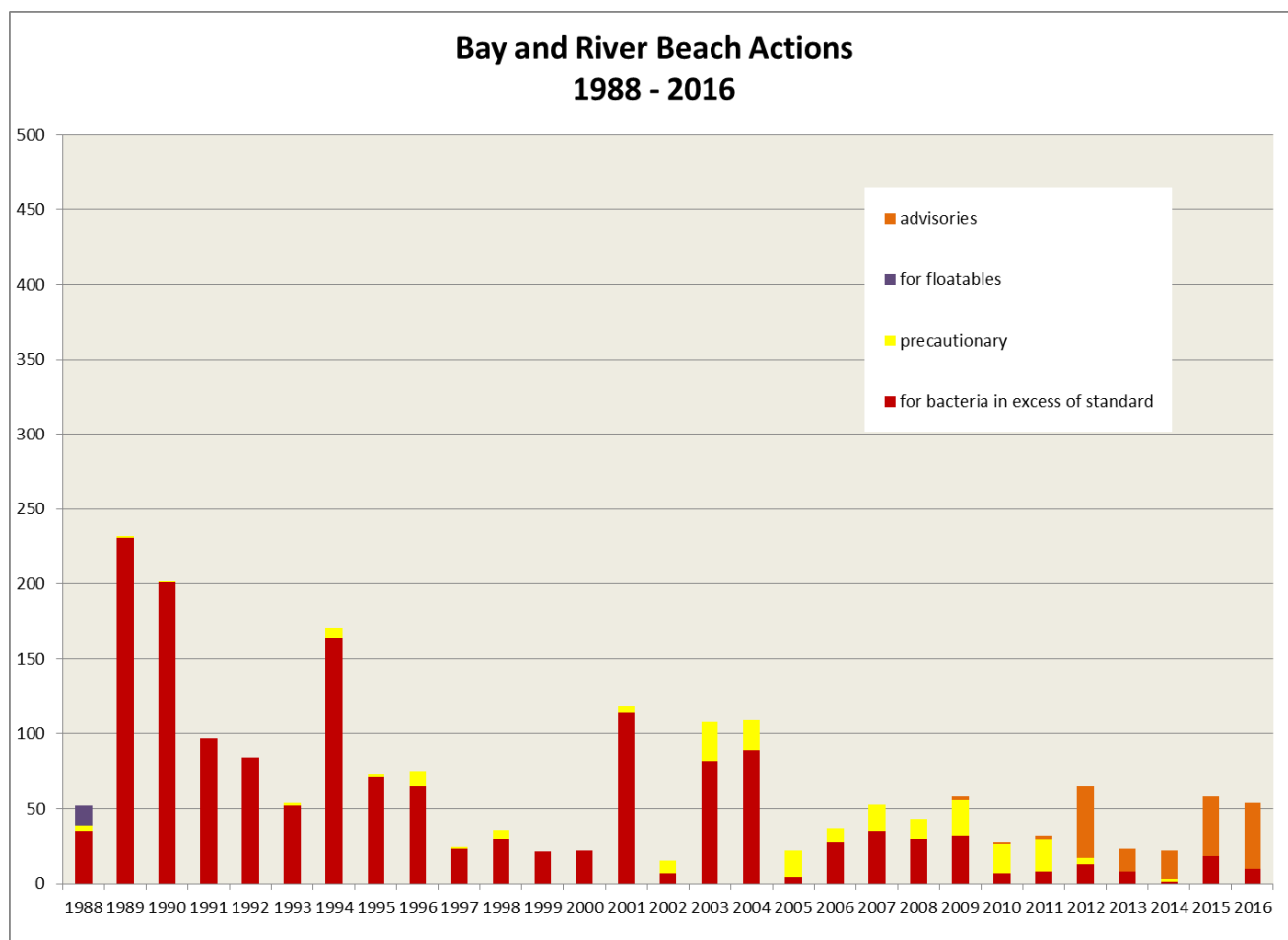


Figure 6. Trend in NJ bay beach actions.

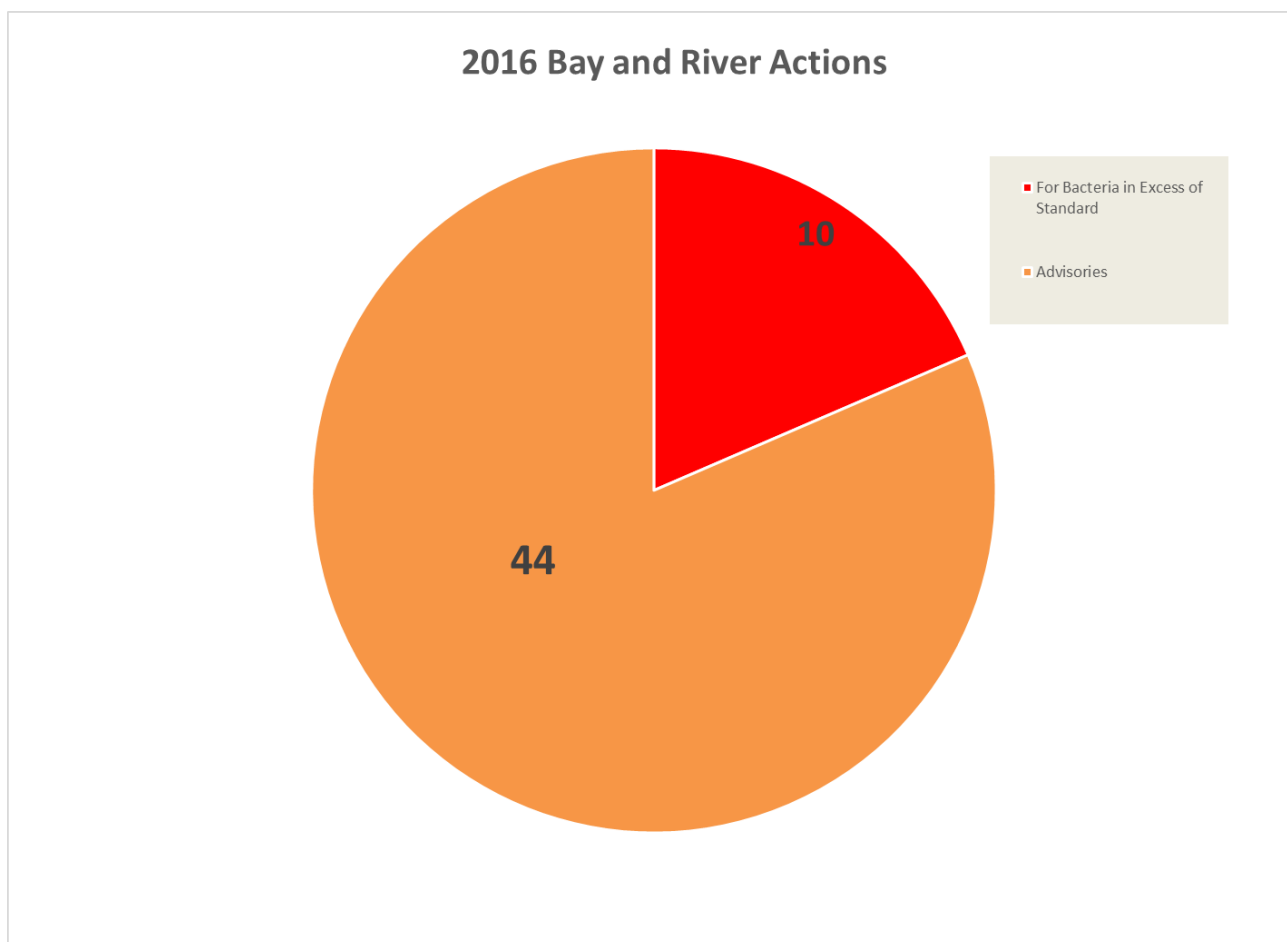


Figure 7. 2016 Bay and river beach actions: Total number of actions and reason for action.

## Percent of Beach Days Available

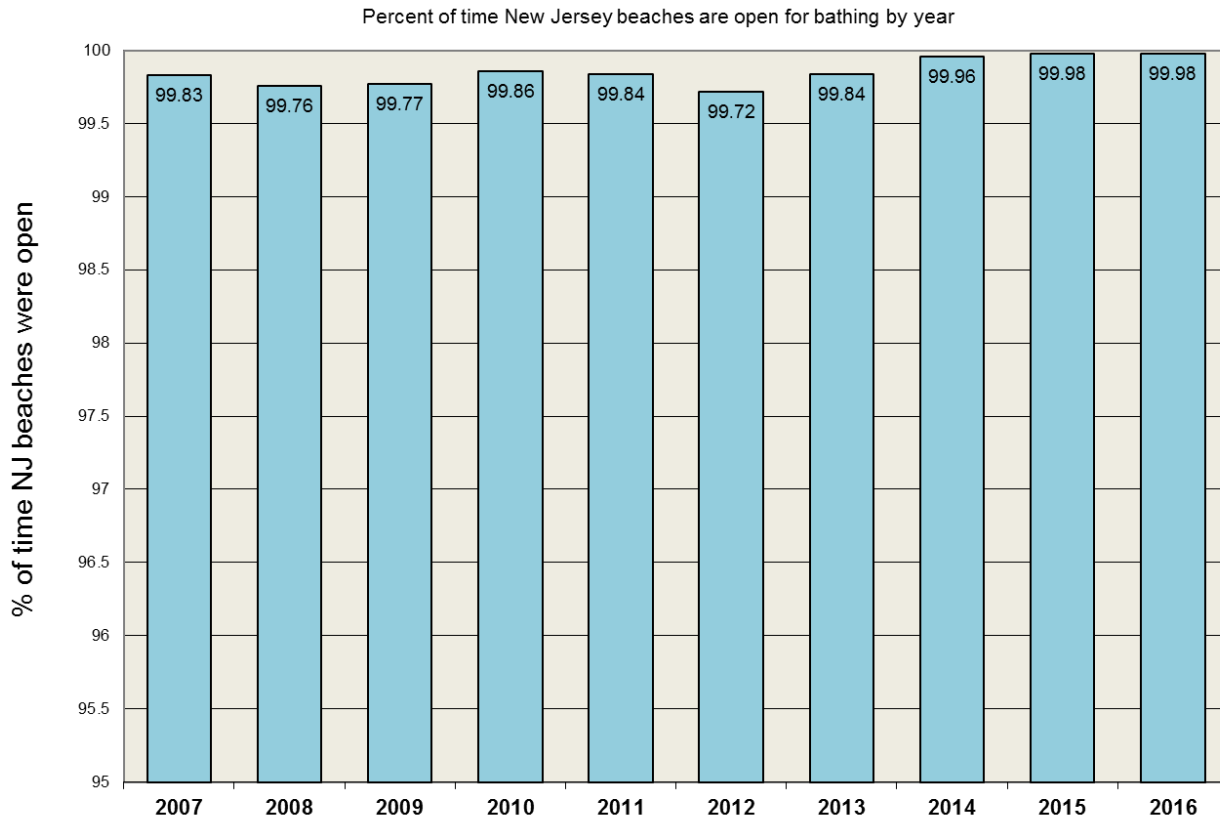


Figure 8. Percent of time NJ ocean and bay beaches are open for bathing by year

### Enhancements to CCMP

DEP has joined with the EPA and others in the private and public sectors to identify and address sources of pollution impacting the State's beaches. This approach will accelerate improvements in the quality of our beaches and coastal waters because of the increased coordination and leveraging of resources.

### Wreck Pond

From 2002-2013, the beaches surrounding the Wreck Pond outfall experienced significant numbers of precautionary beach closings due to potential contamination from the pond reaching bathing beaches after rainfall. For years, NJDEP worked with local stakeholders to look at sources of contamination to the pond, flooding around the pond, and options for addressing these problems. In 2011, NJDEP developed the Wreck Pond Restoration Action Plan to focus efforts to remediate sources of bacteria and reduce flooding. After years of collecting extensive data, several restoration projects and infrastructure assessment and improvements, the provisional rainfall closure policy was lifted beginning with the 2014 beach season. The result of improved water quality is evident with zero exceedances of the water quality standard and no beach closings for the last two beach seasons, 2015 and 2016. For more information, reports and monitoring data on Wreck Pond and the progress of restoration, go to: <http://www.nj.gov/dep/wreckpond/>. Restoration projects include:

- In 2009, Monmouth County Department of Public Works and Engineering installed 14 stormwater manufactured treatment devices in the Wreck Pond watershed using a Corporate Business Tax and 1985 Wastewater Treatment grant. The funding also supported the NJDEP approved Wreck Pond Watershed Restoration Implementation Plan, a Conceptual Design and Feasibility Study for a Living Shoreline and Berm at Wreck Pond, the Manufactured Treatment Device Post Installation Review and an Anadromous Fish Study conducted in the spring and fall of 2014.
- In 2013, a Hurricane Irene FEMA grant was used to install a sluice gate on the existing outfall pipe and reconstruct a berm to inhibit a coastal storm surge.
- The Borough of Spring Lake used an EPA grant to conduct an infrastructure assessment in 2013. The assessment revealed an illicit connection that was immediately terminated. They also received an Environmental Infrastructure Trust principal forgiveness loan to conduct needed repairs revealed during the assessment. Improvements were completed in May 2015.
- Monmouth County has conducted four phases of spot dredging at Wreck Pond removing about 55,000 cubic yards of sediment.
- The US Fish & Wildlife Service received a Department of Interior Hurricane Sandy grant to improve aquatic conductivity in Wreck Pond. The Borough of Spring Lake also received a Corporate Business tax grant to improve water quality in Wreck Pond, and received a US Department of Housing and Urban Development, Community Development Block Grant-Disaster Recovery Program, Flood Hazard Risk Reduction and Resiliency Grant (CDBG) to reduce flood risk. Together these grants funded the construction of a second outfall at Wreck Pond. The new concrete culvert measures 5.5 feet by 8 feet by 600 feet and includes a knife gate that can be closed during storm events if necessary. The new pipe improves water quality by increasing natural tidal flow resulting in increased tidal flushing, improves aquatic conductivity with natural lighted vents, and more than doubles the capacity of water discharging from Wreck Pond during flood conditions thereby minimizing flood risk to the surrounding community. The outfall was completed in November, 2016.
- The Borough of Spring Lake was also awarded a DOI/NFWF Hurricane Sandy grant to create 900 linear feet pilot living shoreline and vegetated berm project. An additional 9000 linear feet of living shoreline and vegetated berm will be constructed around the northern shoreline of Wreck Pond, Black Creek and a small portion in Sea Girt. A maritime forest will also be constructed in the back-beach dune areas to create stabilization. Funding for this project is part of the above mentioned CDBG. The living shoreline and vegetated berm will increase the storage capacity of Wreck Pond, improve water quality by filtering pollutants, impede erosion and create aquatic and riparian habitat. The final design of this project is not yet complete.

## **Coastal Incidents of Note**

The following incidents received public, DEP, and local health agency attention in 2016, although the incidents did not always require beach closings:

### **2016**

Early in the beach season, a significant rain event on May 31<sup>st</sup> was the likely cause of increased bacteria levels at 27 beaches along the coast. On June 1, water quality results showing elevated levels of bacteria were posted on the [www.njbeaches.org](http://www.njbeaches.org) website and automatic advisories were issued at all 27 beaches, even though they were not yet open for the season. Resamples collected the following day at all beaches and bracket stations were within the standard and the advisories were lifted. On July 6, a similar event occurred when 28 swimming advisories were again issued at ocean and bay/river beaches along the coast. All exceedances were very likely caused by additional heavy rainstorms on Monday night into Tuesday morning following the July 4 holiday weekend. The rainfall coincided with sample collection and as such, exceedances of the bacteria

standard were expected. All next-day resample results at ocean beaches were within the standard and swimming advisories were lifted. Two bay beaches were closed for one day following the rain event.

On July 23, one ocean beach, Pittsburgh Avenue in Cape May, was closed as a precaution due to a sewage spill from a beachfront hotel into a nearby storm drain. Water quality samples were collected at the bathing beach and two nearby beaches. Sample results at the bathing beach were above the standard and the beach remained closed for three days following the incident.

On August 19, a large fish kill occurred in several creeks and marinas along the Raritan Bayshore. NJDEP staff and the Monmouth County Health Department responded to the reports and found thousands of dead juvenile menhaden at multiple locations. These fish kills are not uncommon during the summer when massive schools of fish run up into creeks and lagoons and use up all the available dissolved oxygen. The water temperatures were in the 80s and warmer water cannot hold as much oxygen. Warm water combined with enormous numbers of fish using the available oxygen caused the kill. Local public works crews conducted cleanups as needed. Additional accounts of smaller fish kills were reported from various lagoons in Monmouth and Ocean County through early September. Coastal flights recorded very large schools of fish off the entire coast for most of the summer.

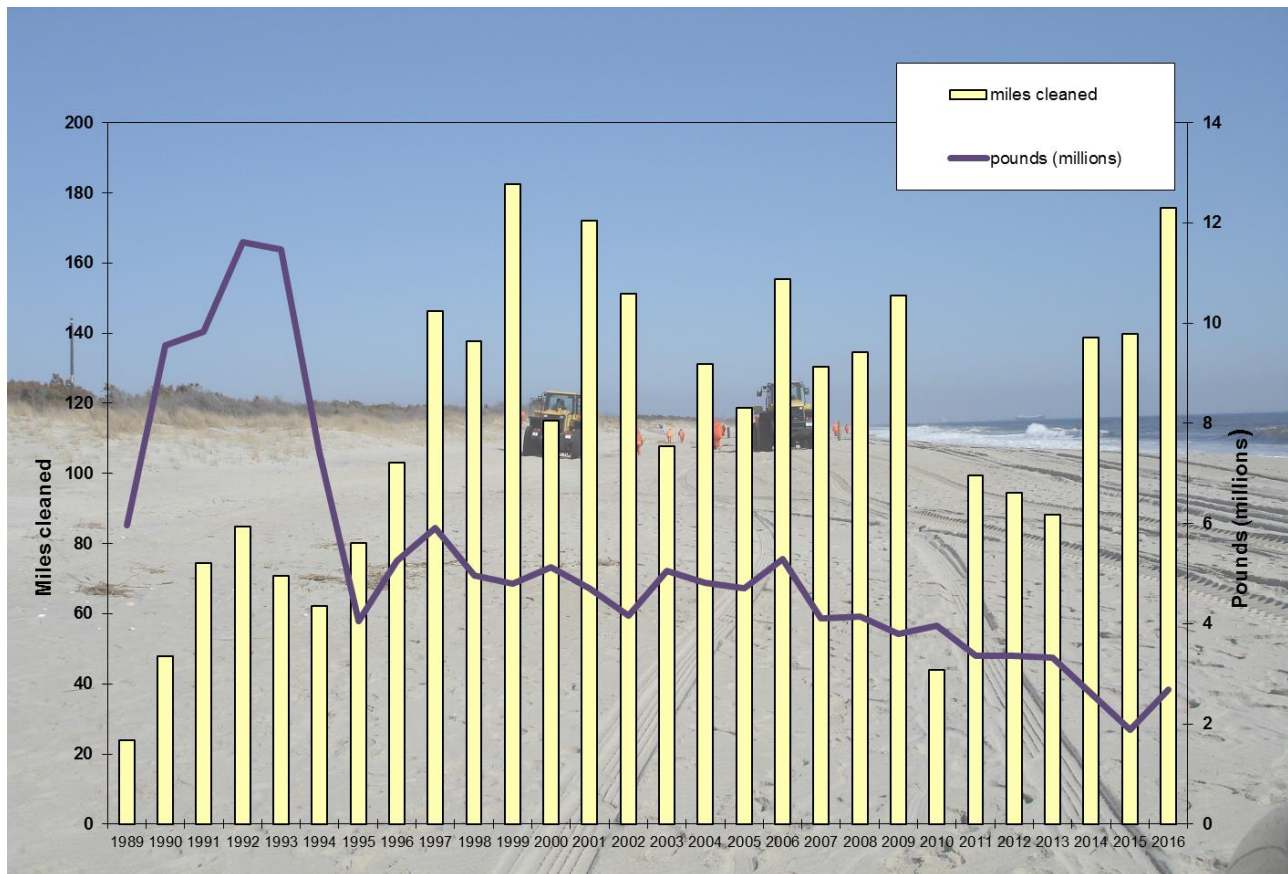
### **Status of New Jersey Beach Water Quality**

New Jersey's water quality is reflected in the number of days New Jersey beaches were open to the public in 2016. With 597 lifeguarded marine beaches in New Jersey and 15 weeks to the bathing season in 2016, New Jersey had a total of 62,685 beach days available. There were a total of 14 beach closings in 2016 representing 0.02% of available beach days. In other words, when the public in New Jersey went to the beach in 2016, they found the beach was open for bathing more than 99.9 percent of the time (Figure 8).

### **Related Program:**

#### **Clean Shores**

Non-recreational shorelines that have been left unattended serve as reservoirs for floatable debris and trash that can be refloated during coastal storms and extreme high tides. This trash and debris can wash up on recreational beaches, become floating hazards to navigation, or impact marine life. DEP has a unique program that uses state correctional facility inmates to remove floatable debris from the shorelines of the Hudson, Raritan, and Delaware estuaries, tidal shorelines and barrier island bays. The Clean Shores Program conducts these shoreline cleanups year-round. The program is entirely funded by the sale of the "Shore to Please" license plates. In 2016, 2.68 million pounds of debris was removed from 175.7 miles of shoreline. (Figure10). The mileage cleaned and total number of pounds of debris removed changes each year depending on the number and severity of coastal storms and their impact on tidal shorelines. More than 147 million pounds of debris has been removed from New Jersey's tidal shorelines since the program began in 1989. The Clean Shores Program has cleaned and re-cleaned more than 3100 miles of the state's coastal shores in the last 27 years.



**Figure 10: Total amount of debris removed by Clean Shores Program since start of program.**

### Additional Information

For additional information about the CCMP, the Clean Shores Program or New Jersey's beach monitoring in general, contact Virginia Loftin at 609-984-5599 or [Virginia.Loftin@dep.nj.gov](mailto:Virginia.Loftin@dep.nj.gov) or visit the Program's website at [www.njbeaches.org](http://www.njbeaches.org).





## **Appendix 1**

### **Wastewater Treatment Facilities Discharging to the Nearshore Coastal Waters**

- 1 Monmouth County Bayshore Regional Sewage Authority
- 2 Township of Middletown Sewage Authority
- 3 Northeast Monmouth Regional Sewerage Authority
- 4 Long Branch Sewerage Authority
- 5 Township of Ocean Sewerage Authority
- 6 Asbury Park Sewerage Authority
- 7 Township of Neptune Sewerage Authority
- 8 South Monmouth Regional Sewerage Authority
- 9 Ocean County Utilities Authority, Northern
- 10 Ocean County Utilities Authority, Central
- 11 Ocean County Utilities Authority, Southern
- 12 Atlantic County Utilities Authority
- 13 Cape May County Municipal Utilities Authority, Ocean City
- 14 Cape May County Municipal Utilities Authority, Seven Mile Middle
- 15 Cape May County Municipal Utilities Authority, Wildwood
- 16 Cape May County Municipal Utilities Authority, Cape May Point
- 17 Lower Township Municipal Utilities Authority