

Cooperative Coastal Monitoring Program

2021 Annual Summary Report



Photo Credit: Odalis Noguera



March 2022

COOPERATIVE COASTAL MONITORING PROGRAM

2021 Summary Report

New Jersey Department of Environmental Protection

Water Resource Management

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New Jersey Cooperative Coastal Monitoring Program
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Introduction:

The Cooperative Coastal Monitoring Program (CCMP) is New Jersey’s Beach Monitoring Program administered by the New Jersey Department of Environmental Protection’s (DEP) Division of Water Monitoring and Standards, Bureau of Environmental Analysis, Restoration and Standards with participation from the New Jersey Department of Health (DOH) and local health authorities (Table 1).

Beaches along the New Jersey shoreline are a hallmark of the summer season in New Jersey, and as such, the DEP prioritizes health and safety at our beaches so residents and tourists may enjoy them to their fullest extent. New Jersey’s CCMP Program was established in 1974, in response to the federal Clean Water Act (CWA), to assess coastal water quality at recreational bathing beaches, communicate results to the public and investigate sources of water pollution to protect public health and safety. The DEP designs the beach sampling and administers the communication, notification, and response responsibilities of the CCMP. Local health authorities that participate in the CCMP perform sanitary surveys of recreational bathing beaches and collect samples of nearshore ocean and estuarine waters to assess the acceptability of these waters for recreational bathing. During the off-season, the DEP develops guidance and protocol documents as well as identification and prioritization of areas for pollutant source tracking.

In 1993, the New Jersey Coastal Protection Trust Fund was created to generate funding to support clean water programs, including the CCMP, through the sale of the “Shore to Please” dedicated specialty license plate. This dedicated license plate can be ordered from the New Jersey Motor Vehicle Commission’s website. Additional information about this may be found under the Clean Shores program section of this report. The CCMP can receive up to \$65,000 annually based on the license plate sale revenue.

On October 10, 2000, the federal Beaches Environmental Assessment and Coastal Health (BEACH) Act was signed into law amending the CWA which gave the United States Environmental Protection Agency (EPA) the authority to award grants to develop and implement beach monitoring and assessment programs. The DEP has received BEACH Development and Implementation grants every year since 2001. These funds are passed through from the DEP to the four primary local health authorities (Table 1) to implement the Program on the local level and to collect and analyze ocean and bay water samples.

Table 1: List of Local Health Authority Partners

Primary Local Health Authorities:	Auxiliary Local Health Authorities:
Cape May County Health Department	Atlantic City Health Department
Atlantic County Division of Public Health	Gateway National Recreation Area
Ocean County Health Department	Long Beach Island Health Department
Monmouth County Health Department	Long Branch Health Department
	Middletown Township Board of Health
	Monmouth County Regional Health Commission

Cooperative Coastal Monitoring Program Procedures:

Water quality is monitored to protect the health and safety of recreational bathers from elevated levels of bacteria and to develop long term water quality trends. The CCMP uses sampling methods and protocols for beach openings and closures in accordance with the New Jersey State Sanitary Code, Chapter IX – Public Recreational Bathing, [N.J.A.C 8:26](#) and the [DEP’s Field Sampling Procedures Manual](#). Local health agencies organize and perform routine weekly sampling at all primary beach monitoring stations from the middle of May through Labor Day.

Primary monitoring stations are selected to be representative of recreational water quality and ensure adequate spatial coverage. All public lifeguarded river and bay recreational bathing beaches have monitoring stations because of their noncontiguous locations. Ocean monitoring station locations are selected based on possible impacts from a potential pollution source. In the absence of potential pollution sources, locations are selected to represent the water quality at several lifeguarded beaches in a contiguous area of the coast. Monitoring station selections are completed by the participating health authorities annually, prior to May 1, and approved by the DEP. Each primary station has bracket stations that are sampled in the event of an exceedance at the primary station. Bay and river beaches have a bracket station located on each side of the primary station, approximately 150 feet away. Ocean beaches have three bracket stations on both sides of the primary station spaced 150 feet apart. Bay and river beaches have fewer bracket stations because these beaches are smaller and isolated. If a primary station has an exceedance, one bracket on each side of the primary station will be sampled along with a resampling of the primary station. Bracketing the station(s) that exceed the standard on both sides will continue until all resamples at stations associated with the primary station beach are within standard. Figure 1 illustrates an ocean beach station with north and south brackets. This configuration allows the DEP to understand the spatial extent and location of the problem thereby better protecting public health and safety.



Figure 1: Ocean Beach Station with North and South Brackets

New Jersey’s recreational bathing beach water quality single-sample maximum standard is 104 Colony Forming Units (CFU) of Enterococci per 100mL of sample. Enterococcus is a genus of gram-positive bacteria that is found within the intestine of humans and other warm-blooded animals. It is a

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fecal indicator bacterium that is tolerant of a wide range of environmental conditions, including salt water, and more closely mimics many pathogens than other indicators. Enterococcus itself is generally not harmful but indicates the possible presence of pathogenic (disease-causing) bacteria, viruses, and protozoans that also live in human and animal digestive systems. Therefore, swimming in water exceeding the standard poses an increased risk of illness, such as gastroenteritis, low grade fevers and infections.

Ocean, bay, and river monitoring officially begins at all public recreational beaches two weeks prior to opening for recreational bathing. Preseason water quality monitoring is required to determine if changes occurred during the off-season that might impact water quality. Preseason water quality exceedances follow the same monitoring protocol as in-season; resamples of primary stations and bracket stations are collected and sanitary surveys are performed daily until results are within the recreational bathing standard. Preseason exceedances don't result in advisories or closures, since the beach is not yet open; however, physical warning signs are posted at the beach when preseason sampling results are above the recreational bathing standard.

Samples are collected on Monday mornings. When Monday is a holiday, samples are collected on Tuesday. Sampling may also be delayed in the event of rough surf conditions posing a danger to samplers. Water samples are analyzed for Enterococci by DEP-certified laboratories using EPA Method 1600. The analysis takes 24 hours. Local health authorities submit and verify water quality monitoring data to the DEP through DEP's web-based Beach Monitoring System. The system automatically determines if an exceedance has occurred at a beach and generates beach action notifications (advisories/closures) for beaches that have opened for the season. If a sample exceeds the standard, then an advisory is posted on njbeaches.org and signs are posted at the beach. The primary station is resampled, bracket stations alongside the primary station are sampled, and a mandatory sanitary survey of that beach is performed by a certified health inspector.

The advisory alerts the public to the exceedance of the water quality recreational bathing standard and warns of increased risk of illness by entering the water. Beaches under advisory remain open while additional samples are collected. Resamples are always performed in conjunction with a sanitary survey, which identifies possible pollution sources and observes water and shoreline conditions. If any of the primary or bracket station samples exceed the standard for a second consecutive day, the beach will be closed to primary contact recreation. Primary contact recreation is defined as recreational activities that involve significant ingestion risks and includes, but is not limited to, wading, swimming, diving, and surfing. However, the public may use the beach for such activities as sunbathing, picnicking, building sandcastles, etc. without entering the water. During a closure, resamples are collected daily at the station(s) that exceeded the standard and the bracket stations until all resamples are within the recreational bathing standard.

Throughout the recreational bathing season, local, county, and State agencies have the authority to temporarily close beaches within their jurisdiction for reasons that may impact water quality or the safety of the public, such as a pollution incident (e.g., sanitary sewage overflow) or floatable debris washup. Beaches may also be closed as a precaution for other non-water quality related reasons typically related to large storm events, rough surf, rip currents or infrastructure issues such as construction, dredging and beach replenishment.

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Water quality data is evaluated by DEP to prioritize areas where pollution is a concern. Source track down studies are conducted to find potential pollution sources and assist responsible entities in correcting the problem. During the beach season, in addition to single sample results, DEP also evaluates the geometric mean (geomean) at each primary beach monitoring location, using data collected over the most recent 30-day period, with a minimum of five samples. The State of New Jersey's recreational bathing water quality geomean standard is 30 CFU of Enterococci per 100 mL of sample. The geomean is used to identify recreational bathing beaches with low-level, but persistent water quality issues. If a beach exceeds the geomean during the season without exceeding the single sample maximum, a sanitary survey is required to identify possible pollution sources and observe water and shoreline conditions. Once the season has concluded, a seasonal geomean is calculated for every beach using all primary station data collected during the season. The seasonal geomean calculations aid in the prioritization of resources for pollution source tracking efforts. All beach water quality monitoring data is uploaded into EPA's Water Quality Portal and all notification data is uploaded into EPA's PRAWN database at the end of each beach season.

New Jersey's Beach Monitoring Program information can be found at njbeaches.org including an interactive map that displays sampling locations, current beach status and water quality results. In addition, historical beach water quality, beach closing and advisory data are available for download from this site. Coastal surveillance flight reports are updated daily along with flight path and chlorophyll levels and are made available via the beach website. Reports and other news regarding New Jersey's coastal recreational bathing beaches are also posted on the website. The Program has a social media presence that the public can follow on twitter @NJBeachReport for daily beach tweets throughout the beach season.

2021 Results and Discussion:

In 2021, the CCMP monitored water quality at 216 primary monitoring stations: 192 ocean, 17 bay, and seven river stations. Generally, there are not many changes to monitoring locations from year to year. In 2020, there were 214 primary monitoring locations. In 2021, four additional ocean beaches were added on the peninsula of Sandy Hook. Samples are collected and analyzed through a partnership between Monmouth County Health Department and Gateway National Recreation Area. Windward Beach, a river beach in Brick Township, Ocean County, chose to not open this year due to lack of resources. In addition, Reese Ave, a bay beach in Lavalette Borough, Ocean County, permanently closed after the borough decided to no longer allow swimming at that location. The net change of monitoring stations was an increase of two in 2021. All changes to monitoring locations were approved by DEP before the start of the season. Additionally, and as required by the New Jersey State Sanitary Code, Chapter IX – Public Recreational Bathing, beach owners and operators are required to complete preoperational checklists which include inspections of the beach and request approval from the local health authority to operate.

Memorial Day weekend is the first weekend that beaches open for the summer in New Jersey. In 2021, the first samples of the season were collected on May 17 to facilitate opening for Memorial Day weekend. 167 beaches opened for Memorial Day weekend: 161 ocean beaches, 5 bay beaches, and 1 river beach. Beaches continued to open throughout June and all beaches were open by June 26. All

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beaches remained open through Labor Day. Beaches began to close the Tuesday after Labor Day and all beaches were closed for the season by October 1.

In total, 3,753 ocean, bay, and river water quality samples were collected during the 2021 recreational beach bathing season. Beach water quality results, advisories, beach closures and reason for the beach closures were posted on the DEP's webpage njbeaches.org daily. Additionally, signs were posted at the beaches during advisories and closures. Signs remained posted until the advisories or closures were lifted.

Ocean Summary:

In 2021, there were 192 ocean monitoring locations (Figure 2), from which 3,283 ocean water quality samples were collected and analyzed by the CCMP. These monitoring stations make up 89% of all monitoring stations in the program. There was a total of 12 advisories which resulted in zero closures due to a bacterial exceedance. In Monmouth County there were two events that led to two-day precautionary closures at the four beaches adjacent to the Wreck Pond outfall, a total of 16 precautionary closures. Additionally, there were 12 closures due to floatable debris washups on four separate days. The first event took place on July 11 and closed three beaches in Monmouth County, the second was on July 14 and closed five beaches in Ocean County, the third occurred on August 26th closing one beach in Monmouth County, and the final event took place on September 1 resulting in three beach closures in Atlantic County. In all these events, the beaches were inspected, cleaned, and raked prior to reopening the following day. Refer to Figure 3 for all ocean beach actions.

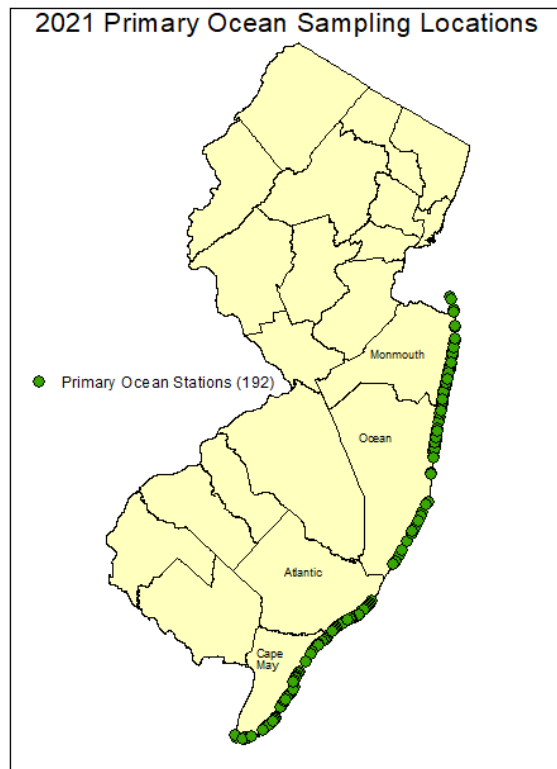


Figure 2: 2021 Primary Ocean Sampling Locations

The DEP and Monmouth County Health Department have worked in partnership for years to manage and mitigate water quality issues associated with Wreck Pond. The Spring Lake Borough's Wreck Pond Outfall Operation and Maintenance Plan, which was approved by DEP, outlines policies for the two outfalls and corresponding tidal gates which allow the pond and ocean to have an open connection. The Plan states that the knife gate on the concrete culvert outfall will remain closed during the beach season to prevent potential pollution sources impacting the four adjacent recreational bathing beaches (Beacon Blvd and the Terrace in the Borough of Sea Girt, and Brown Ave S and York Ave in Spring Lake Borough). During the recreational bathing season, it is only permissible to open the knife gate under emergency conditions where imminent flooding of the surrounding area may occur. During emergency conditions, when the knife gate is open, the four ocean beaches adjacent to Wreck Pond are

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closed as a precaution. The Plan states that these beaches shall remain closed until the emergency conditions subside and the knife gate has been shut for 24 hours. In 2021, two events required the Wreck Pond knife gate to open which resulted in a two-day closure, one from July 8 through July 9 and the other from September 1 through September 2, at the four adjacent beaches: Beacon Blvd and the Terrace in the Borough of Sea Girt, and Brown Ave S and York Ave in Spring Lake Borough, Monmouth County.

Floatable washup events are known to occur after heavy rainfall in the New York/ New Jersey metropolitan area. Hundreds of Combined Sewer Overflows (CSOs) discharge into the New York/New Jersey Harbor. CSOs are built to convey sanitary sewage and storm water to wastewater treatment plants for treatment before being discharged. During heavy rains CSOs are designed to bypass the treatment plant and discharge untreated sanitary waste and storm water directly to the waterways. Depending on wind, tide and surface currents, debris such as plastic sanitary applicators and diabetic syringes in CSO discharges can land on the beaches of New Jersey. The first floatable event in 2021 took place on the afternoon of July 11 following three individual rain events greater than one inch of rainfall, including Tropical Storm Elsa. Three beaches in Monmouth County were closed: Atlantic Ave and Joline in Long Branch City and Pavilion Beach in Monmouth Beach Borough. Monmouth County Health Department notified DEP of the washups, conducted inspections, and sanitary surveys. The affected beaches were raked and cleaned by local public works through the night and early morning. The next day, the local health authorities and beach patrols inspected the beaches and found no additional further signs of the washup and therefore reopened the beaches. However, on July 14 this washup event was observed to continue in Ocean County which is south of Monmouth County. Five beaches were closed after the high tide: Lyman and Princeton in Mantoloking Borough, 7 Ave in Brick Township, East Tuna Way in Toms River Township, and Maryland in Point Pleasant Beach Borough. DEP was notified that morning by Ocean County Health Department of the event. These beaches opened the following day after sanitary surveys and health inspections were conducted, all debris was removed from the beaches, and no additional debris was seen in the water. On the afternoon of August 26, Pavilion Beach in Monmouth Beach Borough, Monmouth County was closed due to a washup. DEP was notified by Monmouth County Regional Health Commission of the washup. The following morning, the beach was reopened after it was cleaned and inspected. On September 1, three beaches: 43 St South, 33 St South, and 26 Street South in Brigantine City, Atlantic County were closed due to a washup. DEP was notified and worked with the Atlantic County Health Department to close the affected beaches. The following morning, they reopened after being cleaned and inspected.

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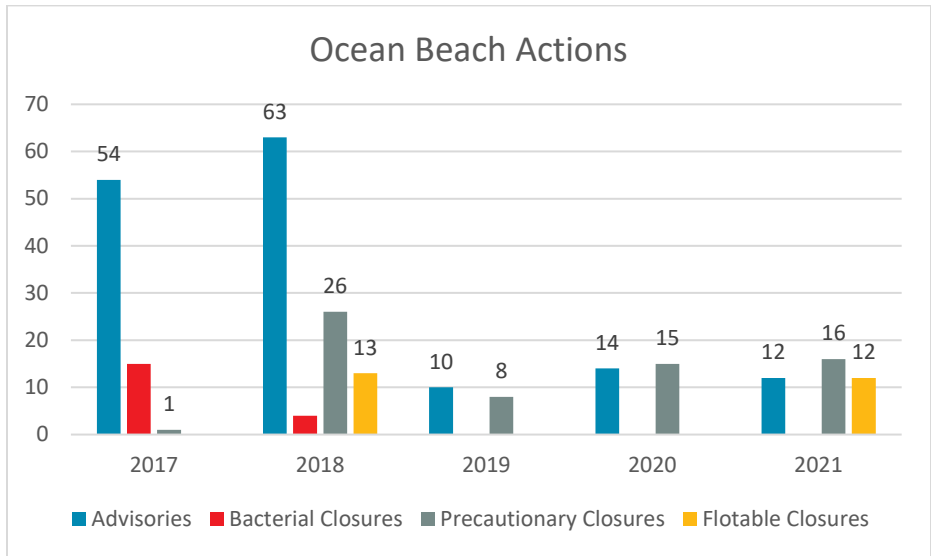


Figure 3: Ocean Beach Actions

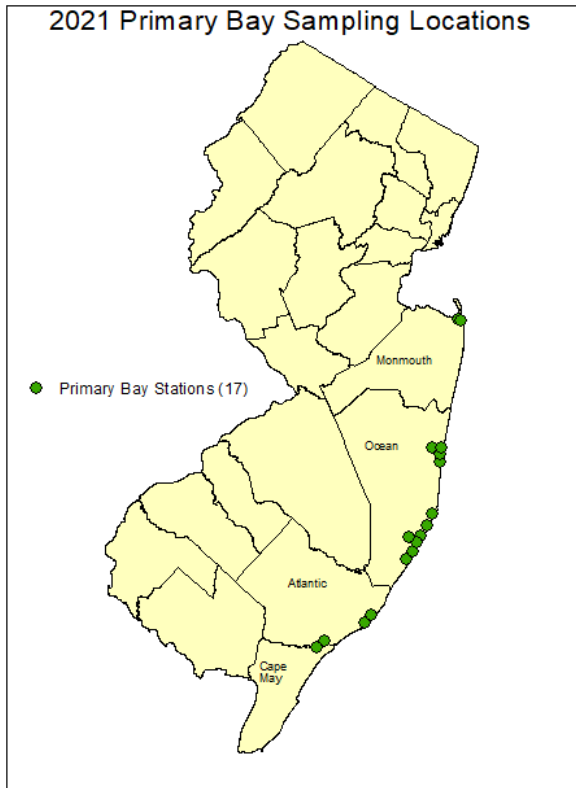


Figure 4: 2021 Primary Bay Sampling Locations

Bay Summary:

New Jersey’s coast has an extensive bay system. In 2021, a total of 332 samples were collected and analyzed from 17 primary sample (Figure 4) stations, representing 8% of the 2021 CCMP monitoring network. Back bay systems are inland to barrier islands, home to important wetlands, receive riverine flows and have a connection to the ocean with various degree of mixing depending on the waters’ proximity to the inlet. Many back-bay locations have higher residence times, meaning that it takes longer for the water to be exchanged with ocean water. Most of New Jersey’s Bay beaches are in Barnegat Bay, however every participating county in the Program has at least one bay beach and corresponding monitoring station. The bay monitoring locations outside of Barnegat Bay are in Great Egg Harbor Bay, Absecon Bay, Sandy Hook Bay, and Raritan Bay.

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There were 13 advisories and 11 closures of bay beaches in 2021. Eight of the closures occurred at 25 St Bay Front Beach in Barnegat Light Borough, Ocean County, one event lasted seven days and the second was a single day. The first event began with an exceedance on July 20. On July 21 a health inspector performed a sanitary survey and observed very shallow and warm bay water. Significant human activity including bathing and dog walking in the area was also observed. On July 22 the area experienced 1.88 inches of rainfall which likely extended the exceedance. DEP staff collected additional water quality samples for advanced microbiocidal analysis and tracked the source to human activities. A Certified Health Inspector conducted an extensive inspection of the area and found a construction site which had a porta-potty next to a storm drain which drains to the north of the beach. The porta-potty was moved, and although it was not confirmed that the porta-potty was the cause of the exceedances, the results were within the standard the following day. This beach also experienced a one-day closure on August 26 after a large rain event. Please refer to Figure 5 for all bay beach actions.

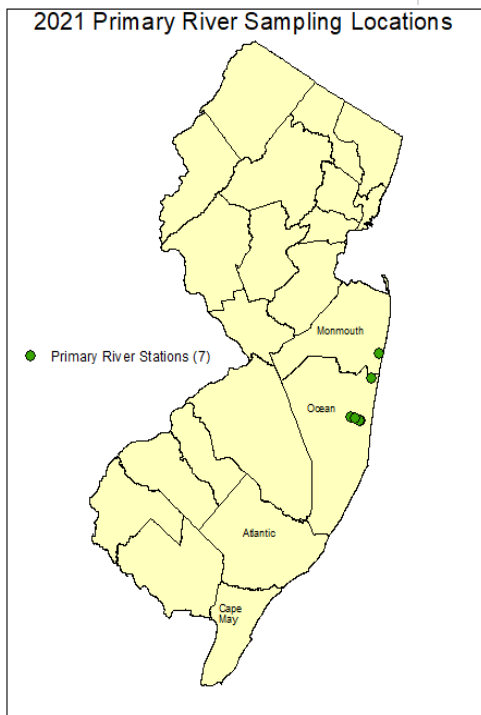
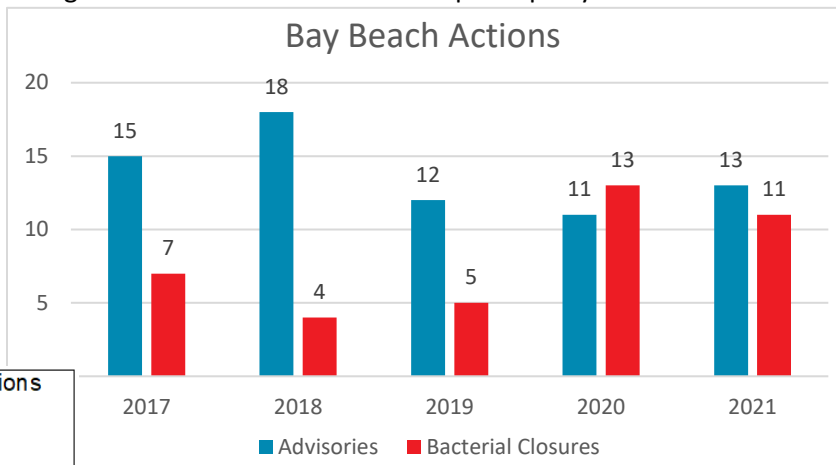


Figure 6: 2021 Primary River Sampling Locations

Figure 5: Bay Beach Actions

River Summary:

Only 3% of CCMP monitoring stations are within riverine systems (Figure 6). All seven river beaches included in the CCMP are tidally influenced. Tide has a significant effect on flushing and residence time of riverine waters. Typically, it takes longer for flushing to occur. In 2021, 139 river water quality samples were collected and analyzed in the CCMP. Of the seven river beaches, six are located within the Barnegat Bay watershed in Ocean County: four on the Toms River and two within the Manasquan River. The seventh river monitoring station is in the Shark River, Monmouth County.

In 2021, there were eight beach actions at river beaches: five advisories and three closures (Figure 7). The three closures took place at Beachwood Beach West and East Beach Station Ave the week of August 24. Beachwood Beach West closed for two days, and East Beach Station Ave closed for one day before reopening. This area had 2.83 inches of rain prior to routine sample collection on Monday that resulted in the closures. Most river closures are due to nonpoint source pollution and storm water impacts resulting from rainfall. Pollution sources tend to linger at river

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beaches due to tide cycles, currents, wind, and geographical features. Therefore, it is not uncommon for advisories to result in closures that can last several days. There are currently efforts underway to identify pollution sources and potential fixes through track-down studies within the Toms River watershed.

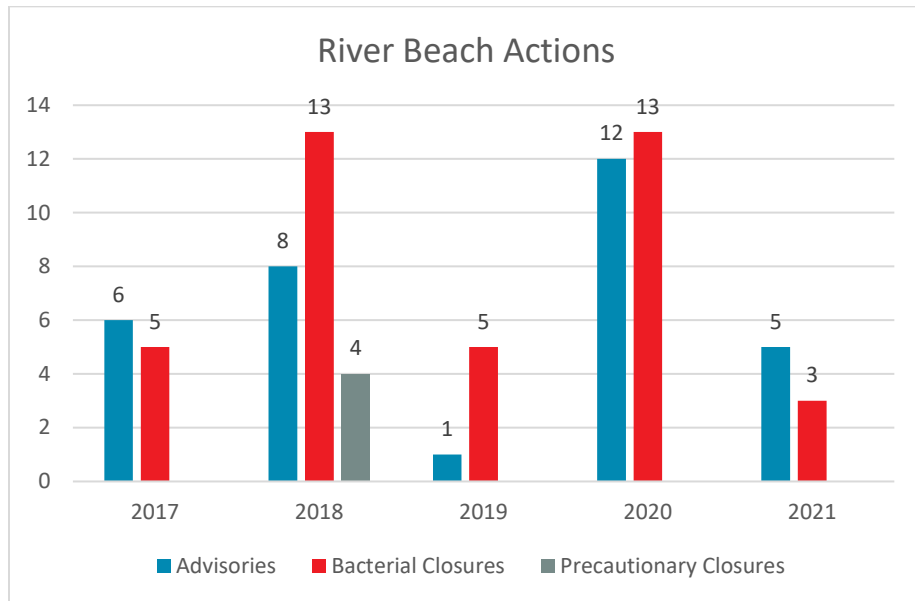


Figure 7: River Beach Actions

Seasonal Geographic Mean:

The DEP utilizes a seasonal geomean statistic to identify recreational bathing beaches with low-level, but persistent water quality issues. At the end of the bathing beach season, all water quality data collected from each primary monitoring station are used to calculate the seasonal geomean. The geomean water quality recreational bathing standard is 30 CFU of Enterococci per 100 mL of sample, calculated from a minimum of 5 samples collected over a 30-day period. In 2021, one river beach and two bay beaches exceeded the standard (Figure 8). The river beach that exceeded the standard was Beachwood Beach West in the Borough of Beachwood. The bay beaches that exceeded the standard were 25 Street Bay Front Beach in Barnegat Light Borough and Hancock in Seaside Heights Borough. All geomean exceedances were in Ocean County. The DEP uses this information to strategically deploy resources for pollution source tracking work and uses a “find and fix”, no blame strategy for eliminating the source.

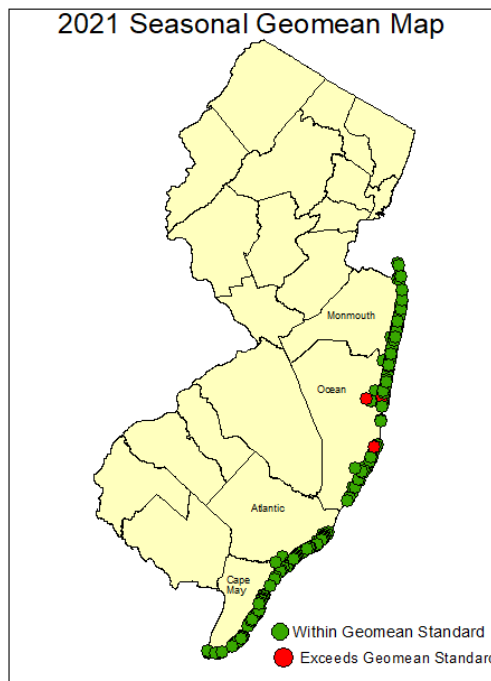


Figure 8: 2021 Seasonal Geomean Map

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Beaches and Rainfall:

Rainfall and resulting stormwater runoff have a significant impact on water quality at public recreational beaches. The DEP works with Rutgers University to compile and make available online rainfall data from the [National Weather Service's Multi-Sensor Precipitation Estimator](#). This sensor technology utilizes a combination of rain gauges and radar to estimate hourly rainfall totals in near real-time for a 2.5 X 2.5-mile grid that covers the state. During storm events, users can access the latest rain total estimates every 30 minutes after the hour. This rainfall data provides the DEP with another tool to assess rain impact on water quality and public health at New Jersey's beaches.

As noted previously, monitoring stations are located at beaches with known potential pollution sources. Many of these potential pollution sources are stormwater outfalls that convey stormwater from our streets to oceans, bays, and rivers. When it rains, water flows across the landscape over lawns, parking lots and streets. The water continues to travel along gutters, into catchment basins, through storm drainpipes and ditches, until finally arriving at stormwater outfall pipes that flow into local waterbodies (Figures 9 and 10). Along the way, stormwater can pick up trash such as, fast-food wrappers, cigarette butts, plastic waste, as well as toxic substances and various pollutants such as, gas, motor oil, antifreeze, fertilizers, pesticides and pet waste, and deposit them in our waterways. Therefore, rainfall has the potential to increase bacteria concentrations near stormwater outfall pipes.



Figure 9: Stormwater Outfall Pipes in Atlantic City, Atlantic County

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Figure 10: Stormwater Outfall Pipes in Wildwood, Cape May

The State of New Jersey is divided into five water regions: Upper Delaware, Northeast, Raritan, Atlantic Coastal and Lower Delaware (Figure 11). All of the public recreational bathing beaches are in the Atlantic Coastal water region. This region is divided up into five watershed management areas which are, from north to south, Monmouth, Barnegat Bay, Mullica, Great Egg Harbor and Cape May. Rainfall data was compiled and analyzed based on watershed management area to determine if it rained prior to sampling. Many beaches in the State are adversely affected by rain runoff. Water quality impacts can continue over 24 hours after a rainfall event, especially in rivers and bays with longer residence times. For this reason, the DEP analyzed rainfall data 36 hours prior to sample collection. The coastline of New Jersey experienced significantly more rainfall in 2021 compared to 2020 (Figure 12). Advisories and closures generally increase during “wet” years and decrease during “dry” years.

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**New Jersey Water Regions and Watershed Management
Areas**

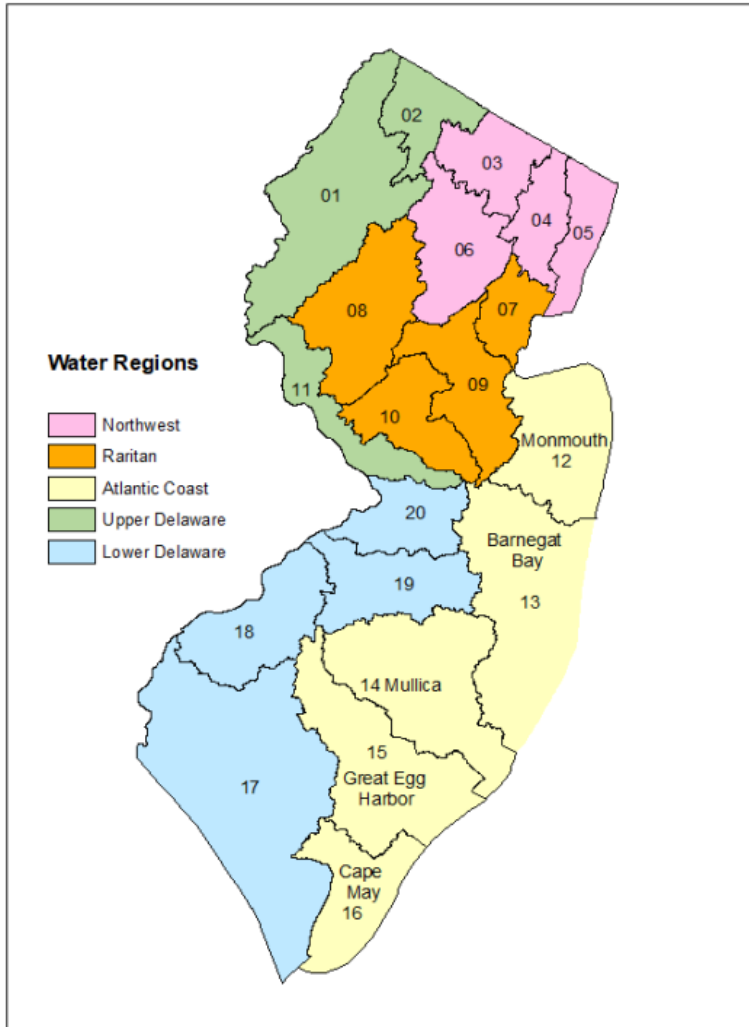


Figure 11: New Jersey Water Regions

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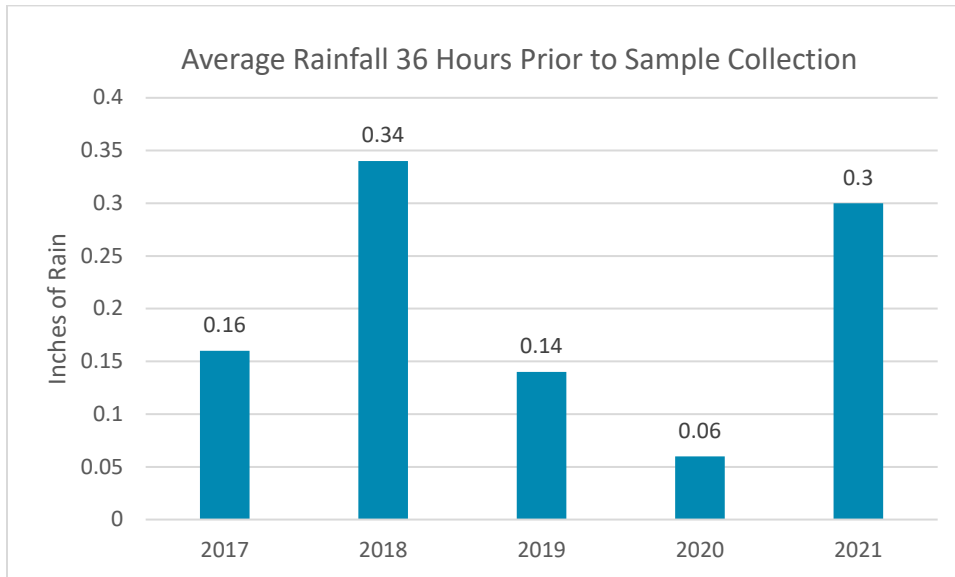


Figure 12: Average Rainfall 36 Hours Prior to Sample Collection

DEP Actions:

If the DEP identifies persistent water quality problems at a recreational bathing beach, the CCMP will implement a pollution source track down strategy in partnership with the Division of Water Monitoring and Standards' [Bureau of Marine Water Monitoring](#), the Department of Health, local health authority and municipality. Background information is collected beginning with a review of existing water quality results and supplemented with additional monitoring studies to address any data gaps. Results from the monitoring studies allow the DEP to understand the spatial extent of an issue and identify areas of concern so that resources can be directed efficiently. Additional investigation of infrastructure using techniques such as video surveillance and dye testing may be necessary. This strategy allows the responsible entity to locate problems and fix them. When infrastructure repair or replacement is necessary, additional funding is typically required.

The DEP encourages municipalities and counties to apply to the [New Jersey Water Bank \(a partnership between the DEP and the New Jersey Infrastructure Bank\)](#) to repair and replace problematic and antiquated infrastructure. The Water Bank Program currently offers 50% principal forgiveness for capital improvement projects that will eliminate, prevent, or reduce occurrences of beach closings due to the presence of harmful algal blooms or pathogens. Funding may be awarded to projects that would eliminate potential sources such as leaking or broken sanitary sewers and illegal cross connections between storm sewers and sanitary sewers.

The DEP is also committed to working with CSO permittees and CSO communities to reduce or eliminate CSOs. The DEP assists permittees in meeting their permit obligations by providing technical assistance, guidance, and training. The goal of the CSO permits is to meet the requirements of the Clean Water Act and the National CSO Policy by reducing or eliminating the remaining CSO outfalls in New Jersey. In order to achieve the reduction or elimination of outfalls, CSO permittees will need to reduce flooding, ensure proper operation, maintenance and management of existing infrastructure and provide

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opportunities for green infrastructure. These permits reinforce the importance of properly operated and maintained water infrastructure systems in protecting public health and the environment and supporting economic redevelopment. A major emphasis of the permit process is the development of regional strategies to reduce the amount of storm water that flows into combined sewer systems, through the development and implementation of a Long Term Control Plan. For more information you can visit DEP's Division of Water Quality, Bureau of Surface Water and Pretreatment Permitting's [CSO webpage](#).

Supporting Programs:

Water Compliance and Enforcement:

As part of the CCMP, the DEP's Division of Water Compliance and Enforcement (C&E) inspects, three times a season, 17 wastewater treatment facilities that discharge to the ocean ([Appendix 1](#)). The inspections take place the week before each of the three summer holidays: Memorial Day, Independence Day and Labor Day. In addition, C&E assists in the investigation of sources of water pollution reported to our DEP Hotline.

Aerial Surveillance:

The CCMP partners with the New Jersey Forest Fire Service to perform coastal surveillance flights in their Cessna Fixed Wing Aircraft (Figure 13). Flights are conducted six days a week during beach season, weather permitting. During the flight, a pilot and trained DEP staff observe wastewater treatment plant discharges and any changing coastal water and beach conditions. In addition, one day a week the flight path is extended to several lakes as part of the [DEP's New Jersey Harmful Algal Bloom \(HAB\) Response Strategy](#). The Aerial Surveillance Program is also funded by the "Shore to Please" license plate sales. The pilot and staff on the surveillance flights look for floatable debris, possible pollution sources, algal blooms, or anything potentially harmful to bathers.



Figure 13. NJ Forest Fire Service Cessna Fixed wing

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Coastal surveillance flights cover the Raritan Bay, Lower New York Bay, and the Atlantic coast from Sandy Hook to Little Egg Inlet six days a week. Flights on Thursdays and Sundays are extended to include the area from Little Egg Inlet to Cape May Point and up Delaware Bay. Flights on Tuesdays are extended to typically include the following inland lakes: Round Valley Reservoir, Spruce Run Reservoir, Budd Lake, Lake Musconetcong, Lake Hopatcong, Lake Mohawk, Greenwood Lake and Swartwood Lake.

Coastal flights began in the late 1980s. In 2007, the aircraft was equipped with a hyper-spectral sensor calibrated to estimate chlorophyll-a levels in coastal waters. High levels of chlorophyll-a are indicative of algal blooms. If an algal bloom is detected, samples are collected by either DEP staff or partnering local health authorities. Samples are analyzed to quantify and identify predominant algal species to determine if any species present are potentially harmful to humans and animals (see <https://www.nj.gov/dep/hab/> for more information). Figure 14 shows an example of chlorophyll-a levels collected on the short flight path flown on Mondays, Fridays, and Saturdays. Figure 15 is an example of the long flight path flown on Thursdays and Sundays. Figure 16 is an example of the flight path that was added during the 2019 beach season, which included lakes and a short coastal flight which is flown on Tuesdays. For more information, please visit [Chlorophyll Remote Sensing](#)



Figure 144: Short Coastal Flight Path



Figure 15: Long Coastal Flight Path



Figure 16: Short Flight Path Including Lakes

Flight reports are available daily at njbeaches.org. Coastal aerial surveillance statistics can be found in Table 2.

Table 2: 2021 Aerial Surveillance Statistics

Number of Scheduled Flights	107
Number of Flights Attempted	83
Number of Flights Completed	71
Number of Canceled Flights Due to Weather prior to Departure	24
Number of Flights Chlorophyll-a data was collected	79
Number of Flights with Dolphin Sightings	37
Number of Flights with Baitfish Sightings	58
Number of Flights with Ray Sightings	33
Number of Flights with Turtle Sightings	2

Number of Flights with Whale Sightings

1

Environmental Coastal Monitoring:

In 2020 the DEP implemented a new supplemental program to monitor water quality in areas where primary recreation occurs but is not regulated by the New Jersey State Sanitary Code as a Public Recreational Bathing Beach. The DEP recognizes that primary recreation may be occurring at areas other than regulated Public Recreational Bathing Beaches and therefore has begun Environmental Coastal Monitoring (ECM) to assess water quality at various additional locations. This program is also funded by the “Shore to Please” dedicated specialty license plate sales.

Although this monitoring program is not subject to the State Sanitary Code, it is still important to public health and safety to understand water quality conditions in these areas and communicating to the public water quality results. This monitoring program is run by DEP staff only.

The sampling plan devised by the DEP separates the coast into three regions: Northern, Central and Southern. The Northern region includes Middlesex and Monmouth counties, the Central region is Ocean County, and the Southern region includes Atlantic and Cape May counties. These regions are sampled on a rotating basis. Each monitoring location is sampled once every three weeks. Locations that do not meet the recreational bathing standard are put under an advisory until additional sampling results are within the recreational bathing standard again. Results are available to the public at the [Environmental Coastal Monitoring website](#). In addition, each monitoring location has a sign to make the public aware that routine sampling occurs at these locations and to direct them to the website to find the water quality data.

A total of 37 locations monitored as part of this program are shown in Figure 17: 27 bay stations, nine river stations, and 1 ocean station. In 2021, a total of 221 samples were collected and analyzed resulting in 16 advisories: one in Atlantic County, one in Cape May County, nine in Monmouth County, and five in Ocean County. The DEP will continue this supplemental program in 2022.



Figure 15: Environmental Coastal Monitoring Stations

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Clean Shores Program:

The DEP has partnered with the New Jersey Department of Corrections since 1989 to administer the Clean Shores Program. Clean Shores is a year-round program that utilizes State inmate details to conduct daily clean-ups in tidally influenced waterways, such as back bays and beaches. Typically, the detail removes floatable debris like wood, litter, and plastic waste (Figure 18). Non-recreational shorelines that have been left unattended serve as reservoirs for floatable debris and trash that can be dispersed during coastal storms and extreme high tides. Removing this trash and debris prevents it from washing up on recreational beaches, becoming floating hazards to navigation, or impacting marine life. The partnership is mutually beneficial allowing the State to provide a needed service to municipalities and giving an opportunity for minimum security inmates to give back to the community in a meaningful way. For more information, please visit the [Clean Shores Program](#).



Figure 16: Clean Shores Detail Removing Wood, Debris, Trash, and Plastics on Sandy Hook

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Municipalities that currently participate in the Clean Shores Program encompass the shorelines of the Hudson, Raritan and Delaware estuaries, tidal shorelines, barrier islands and back bays. Note, in Figure 19 that not all eligible municipalities are currently participating. When the Program began in 1989, the State’s shoreline had significant amounts of debris and litter, especially large wooden debris such as, pilings and docks. As a result, the Program did not cover significant mileage due to the enormous volume of debris collected, typically millions of pounds each year. Due to continued commitment to this Program, the density of trash found at the work sites has been reduced, which allows the Program to cover more coastal mileage (Figure 20). Note that during 2020 and 2021, the Clean Shores Program operated for periods of time without an inmate detail due to the Covid-19 pandemic.

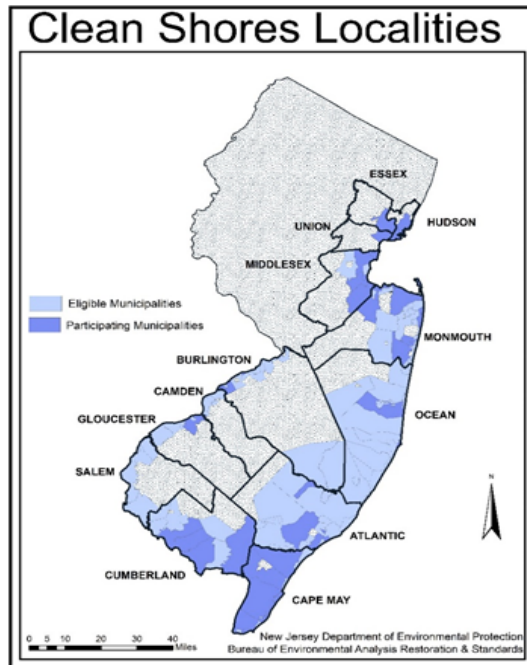


Figure 17: Eligible and Participating Clean Shore Municipalities

Between 1989 and 2021, more than 155 million pounds of debris have been removed, and 3,746 miles of New Jersey’s tidal shorelines have been cleaned and recleaned by the program. Funding for the Clean Shores program comes entirely from the revenue of the “Shore to Please” dedicated specialty license plate sales (Figure 21). During the 2018 and 2019 beach seasons, the DEP used an aerial banner to promote the sale of these specialty plates.

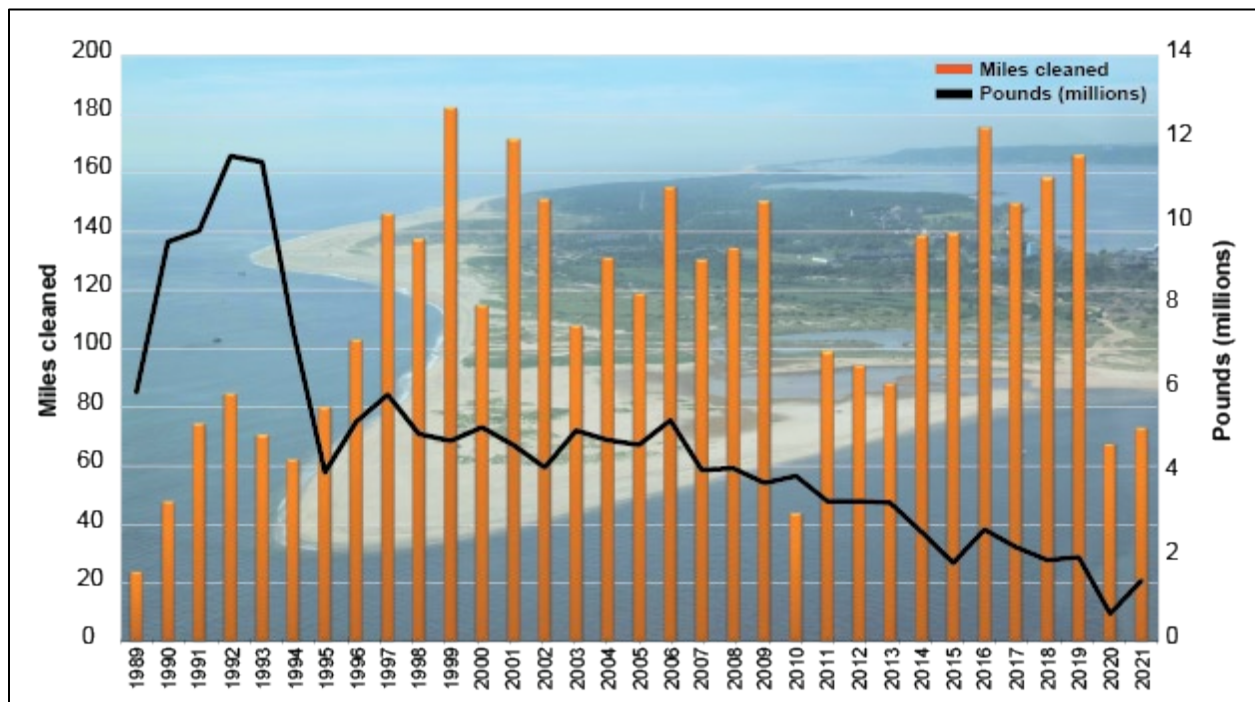


Figure 18: Miles Cleaned vs. Trash Removed by the Clean Shores Program

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The public's support of the program through sales of the license plate will allow more municipalities to participate throughout the year and consequently, remove more debris from New Jersey's shorelines. Please support this Program. Apply for the ["Shore to Please" license plate](#).



Figure 19: NJDEP's Beach Program Banner Plane Advertisement, 2018 and 2019 Summer Months (NJDEP)

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Appendix 1:

Wastewater Treatment Facilities Discharging to the Nearshore Coastal Waters:

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