

Floatables Action Plan Assessment Report 2006



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Floatables Action Plan Assessment Report 2006

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Abstract

The Floatables Action Plan was developed in 1989 to address floatable debris in the New York Bight, which includes the New York/New Jersey Harbor Complex and the shorelines of Long Island and New Jersey. The plan was developed jointly by an interagency workgroup that included representatives from the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Coast Guard, National Oceanic and Atmospheric Association, New Jersey Department of Environmental Protection, New York State Department of Environmental Conservation, New York City Department of Environmental Protection, the New York City Department of Sanitation, and the Interstate Sanitation Commission. The Floatables Action Plan has been carried out each year since to control washups of floatable debris on area beaches. The plan consists of aerial surveillance via helicopter and fixed winged plane; a communications network to report "slick" sightings and to coordinate cleanup response; and routine cleanups conducted by skimmer vessels in the harbor area. Since its inception, the plan has significantly reduced the amount of floating debris escaping the Harbor Complex and has expanded to include volunteer collection programs, boom and skim programs, combined sewer overflow collection programs and beach clean up programs. To date, approximately 350 million pounds of debris have been removed from the New York Bight area.

This report summarizes the 2006 efforts of the interagency partners in implementing the Floatables Action Plan and accomplishing the following objectives:

- Minimization of the amount of floatable debris escaping the New York/New Jersey Harbor Complex.
- Maintaining an effective communication network to coordinate floatable debris removal activities and to respond to the spotting of slicks.
- Minimization of the adverse impact of floatable debris on the marine environment.
- Ensuring timely notification of beach operators concerning potential wash-ups of floatable debris.
- Minimization of beach closures due to floatable debris.

Coastal New Jersey, New York City and southern Long Island beaches experienced no beach closings due to floatable debris in 2006. The interagency implementation of the Floatables Action Plan was a major contributor to maintaining this improved beach status.



Introduction

Floatable debris consists of a wide assortment of plastic, wood, paper, glass, rubber, metal and organic waste materials that float or are suspended in the water column and may eventually be deposited on shorelines and beaches. Floatable debris originating from street litter, combined sewer overflow (CSO) discharges, storm water discharges, decaying shoreline structures, pleasure boaters, and littering beach goers, can harm the marine environment and cause area beaches to close.

During the summers of 1987 and 1988 the impacts of the floatable debris in the New York and New Jersey water bodies were alarming. Several beaches were forced to close down for extended periods of time due to debris washing up on the shores. The State University of New York Waste Management Institute estimated an economic loss of between \$900 million and \$4 billion in New Jersey and between \$950 million and \$2 billion in New York. In response, the Floatables Action Plan was developed to establish clean-up measures for the New York/New Jersey Harbor Complex and consequently, the surrounding beaches.

The Floatables Action Plan was developed jointly by an interagency work group comprised of the Environmental Protection Agency (EPA), U.S. Corps of Engineers (USACOE), U.S. Coast Guard (USCG), National Oceanic and Atmospheric Association (NOAA), New Jersey Department of Environmental Protection (NJDEP), New York State Department of Environmental Conservation (NYSDEC), New York City Department of Environmental Protection (NYCDEP), New York City Department of Sanitation (NYCDOS), and the Interstate Sanitation Commission (ISC).

The Floatables Action Plan is part of EPA's response to its mandated responsibilities as defined under the Marine Plastic Pollution Research and Control Act of 1987. Subtitle C of the act mandates that the EPA, in consultation with NOAA and other Federal agencies, prepare a New York Bight Restoration Plan. As part of the Restoration Plan, the Floatables Action Plan was designed to focus on locating and cleaning up floatable debris in the NY/NJ Harbor Complex and surrounding areas. Specific objectives include: improve water quality, protect the marine environment, and prevent the occurrence of beach closures due to floatable debris.

Through interagency cooperation, partnership building, and effective communication, the objectives stated in the Floatables Action Plan have been achieved. This report is an historical account of various activities to control floatable debris since the initiation of the Floatables Action Plan. Table 1 summarizes the amount of debris collected in 2006 and the total amounts collected since the initiation of the program.



Table 1. Summary Table of Floatables Collection Programs

Floatables Collection Program	Floatables Collected in 2006	Total Floatables Collected
USACOE Drift Collection Vessels Program	10,084,000 lbs	203,866,000 lbs 1988-2006, 19 years
Ocean Conservancy's International Coastal Clean-up (8 counties in NY)	228,467 lbs	1,903,144 lbs 1994-2006, 13 years
NYCDEP Cormorant Open Water Skimmer Vessel Collection Program	0 lbs (Vessel not operational in 2006)	6,740,000 lbs 1994 – 2006, 13 years
NYCDEP Boom and Skim Collection Program	927,990 lbs	7,544,907 lbs 1995-2006, 12 years
NYCDEP Special Projects Program	32,400 lbs	928,800 lbs 1998-2006, 9 years
New Rochelle, NY Boom Collection Program	2,480 lbs	108,000 lbs 1998-2006, 9 years
NJDEP Clean Shores Program	5,292,000 lbs	114,660,000 lbs 1989-2006, 18 years
NJDEP's Adopt-A-Beach Collection Program	17,421 items	921,663 items 1993-2006, 14 years
PVSC Skimmer Vessel Collection Program	238,000 lbs	2,296,000 lbs 2000-2006, 7 years
PVSC Passaic River/Newark Bay Shoreline Restoration Program	1,656,000 lbs	9,238,000 lbs 1998-2006, 9 years
NJDEP Municipality Floatable Debris Collection Programs	922,000 lbs	5,702,000 lbs 1999-2006, 8 years
TOTAL*	19,427,828 lbs	353,033,600 lbs

Notes:

* Total excludes amount of items collected in Adopt-A-Beach Collection Program.

All values are approximate. For comparison reasons, some values are based on a conversion factor of 100 cubic feet per 2000 pounds. Historical values as reported by the various agencies are listed in Appendixes 1 – 4.

Interagency Collection Programs



Photo: USACOE Vessel Gelberman

The United States Corps of Engineers (USACOE) Drift Collection Vessels Program

The USACOE is one of the main partners involved in the Floatables Action Plan. With the use of drift collection vessels (the Hayward, Driftmaster and Gelberman), they are able to collect much of the floatable debris found throughout the NY/NJ Harbor Complex. The Water Resources Development Act (WRDA) of 1974 was modified by WRDA 90 Section 102 (V) Public Law 99-662, to authorize the USACOE to collect floatable debris while removing navigational hazardous. The USACOE estimates that 90 percent by volume of its collection total consists of wood debris. Tires, plastic waste, cardboard, seaweed, sewage-related materials and street runoff-related materials constitute the remaining 10 percent by volume. The USACOE drift collection vessels collected an estimated 5,024 tons (10,084,000 lbs) of floatable debris throughout the USACE fiscal year 2006. Information about the USACOE vessels and the yearly total drift collection amounts from 1988 to 2006 can be found in Appendix 1. Website: <http://www.nan.usace.army.mil/>

New York City Department of Environmental Protection (NYCDEP) Vessel Program, Boom and Skim Collection Program, and Special Project Program

The 1992 CSO Abatement Order on Consent between the NYCDEP and New York State Department of Environmental Conservation (NYSDEC) required the NYCDEP to implement a short-term booming and skimming program to address floatables debris from approximately 50% of the City's CSO area. The NYCDEP operates a large open water skimmer vessel, the SV Cormorant, in the NY/NJ Harbor. Due to technical malfunctions the SV Cormorant was not operational in 2006. In addition, four smaller skimming vessels are used in Jamaica Bay, the East River, Newtown Creek, Buttermilk Channel, Flushing and Bowery Bays. These vessels collected approximately 928,000 pounds of debris in 2006. The SV Cormorant began collecting floatable debris in 1994, and the smaller vessels beginning in 1995. Appendix 2 lists historical collection amounts and vessel information.

Website: http://nyc.gov/html/dep/html/harbor_water/float.shtml.

In 1998, the NYCDEP initiated a beach clean-up program in the Gerritsen Beach area of Brooklyn, NY. This project, now termed NYCDEP's Special Project Program, was expanded in 1999 to also include Fort Hamilton High School and Coney Island Creek Beach components. These new components serve to remove debris collected in the vicinity of the Verrazano Narrows Bridge. Approximately 32,400 pounds of debris were removed by volunteers along these beaches and shorelines in 2006. Historical collection totals are located in Appendix 2.

Ocean Conservancy's International Coastal Clean-up

The Ocean Conservancy sponsored the 20th Annual International Coastal Clean-up in September, 2006. Over 10,000 volunteers collected 272,157 pounds of debris at 338 sites across New York State, coordinated throughout New York State by the American Littoral Society. The data shown in this report covers eight selected counties in New York: Suffolk, Nassau, Queens, Kings, Richmond, Manhattan, Bronx, and Westchester.

Website: <http://www.alsnyc.org/cleanup.htm>

New Rochelle, NY Boom Floatable Debris Collection System

In 1998, the City of New Rochelle, under a New York State Division of Environmental Conservation (NYSDEC) grant, installed a "Stream Floatables Debris Collection System" at the Stephenson Brook storm water drainage area outfall, which empties into Echo Bay and Long Island Sound. The system has a holding capacity of 1 cubic yard of debris. In 2006, approximately 2,480 pounds of debris were collected including wood, paper, glass, metal, plastics and organics. Historical collection totals are located in Appendix 2. Website: <http://www.newrochelleny.com/storm.asp>

NJDEP's Clean Shores Program

Beginning in 1989, NJDEP began a program called "Operation Clean Shores", designed to collect shoreline floatable debris before it became resuspended due to tidal influences. This program uses New Jersey inmates to collect floatable debris, comprised mainly of landed drift wood, on non-recreational shorelines in order to prevent floatable debris from being re-floated during extreme high tides and washing up on recreational beaches, and/or becoming hazards to navigation and impacting marine life. The program, now called "Clean Shores", is conducted throughout the State of New Jersey in the Hudson, Raritan and Delaware estuaries and barrier island bays. In 1993, the Clean Shores Program was put into service on a year-round basis whereas formerly it was only implemented during the bathing season. In 2006, approximately 2,646 tons (5,292,000 pounds) of debris were collected. Historical collection totals per miles of shoreline cleaned, are located in Appendix 3.

Website: <http://www.state.nj.us/dep/bmw/CleanShores/CSmain.html>



Photo: NJDEP's Clean Shores Program

NJDEP's Adopt-A-Beach Program

The State of New Jersey enacted a law in January 1993 which authorized NJDEP to administer an "Adopt A Beach" program fostering volunteer stewardship of coastal beaches. NJDEP sponsors two statewide beach clean-ups each year. Volunteers select (adopt) a beach for these clean-ups. Data are then forwarded to the Ocean Conservancy in order to be included in their national and international marine debris database. For this program, collection totals are recorded by the number of items collected and not by weight. In 2006, 17,421 items were collected. Historical collection data can be found in Appendix 3. Website: http://www.state.nj.us/dep/watershedmgt/adopt_a_beach.htm

NJDEP's Clean Shores and Adopt A Beach Programs are funded by the sale of Shore Protection license plates.

Passaic Valley Sewerage Commissioners (PVSC) Skimmer Vessel Collection

The Passaic Valley Sewerage Commissioners (PVSC) operates two skimmer vessels on the Passaic River and in Newark Bay. The larger vessel, SV Newark Bay, is used in the Passaic River and Newark Bay. The smaller vessel, SV Passaic Valley, is used in the upper parts of the Passaic River where the larger vessel can not reach, due to shallow waters and low bridges. In 2006, approximately 119 tons (238,000 pounds) of debris were collected. Historical collection totals are located in Appendix 3. Website: <http://www.pvsc.com/rr/index.htm>

PVSC Passaic River/Newark Bay Shoreline Restoration Program

In 1998, PVSC established a program to remove trash along the banks of the Passaic River. The program provides coordination and support to municipalities, counties, citizens, service groups, and local businesses to conduct shoreline clean-ups along the river and in their communities. In addition to the sponsorship of voluntary efforts, PVSC has implemented an extensive clean-up of the river's shoreline by creating a River Restoration Department, consisting of 22 full-time employees dedicated to the removal of trash and debris from the Passaic River and Newark Bay. In 2006, approximately 828.4 tons (1,656,000 pounds) of debris were collected. Historical collection totals are located in Appendix 3. Website: <http://www.pvsc.com/rr/index.htm>

NJDEP Municipality Floatable Debris Collection Programs

Using General Permit conditions, NJDEP requires municipalities with combined sewer systems to construct control measures which will capture and remove solids and floatables through a bar screen having a bar spacing of 0.5 inches. Twelve New Jersey Municipalities participate in this program to decrease the amount of solids/floatables in the New Jersey area. The data collected here and presented in Appendix 4, represent only the participating municipalities that weigh and record floatable debris collections, this data does not represent all of the combined sewerage overflow efforts in New Jersey. In 2006, approximately 461 tons (922,000 pounds) of debris were collected.

Aerial Surveillance

Floatable surveillance of the New York/New Jersey Harbor Complex was conducted Monday through Saturday, excluding routine maintenance or inclement weather days, from May 29 through September 4, 2006, via the EPA helicopter. NJDEP conducted surveillance from Raritan Bay south to Barnegat Light on Mondays, Tuesdays, Fridays and Saturdays; and from Raritan Bay to Cape May Point on Thursdays and Sundays, during the summer season.



Photo: NJDEP's Surveillance Aircraft

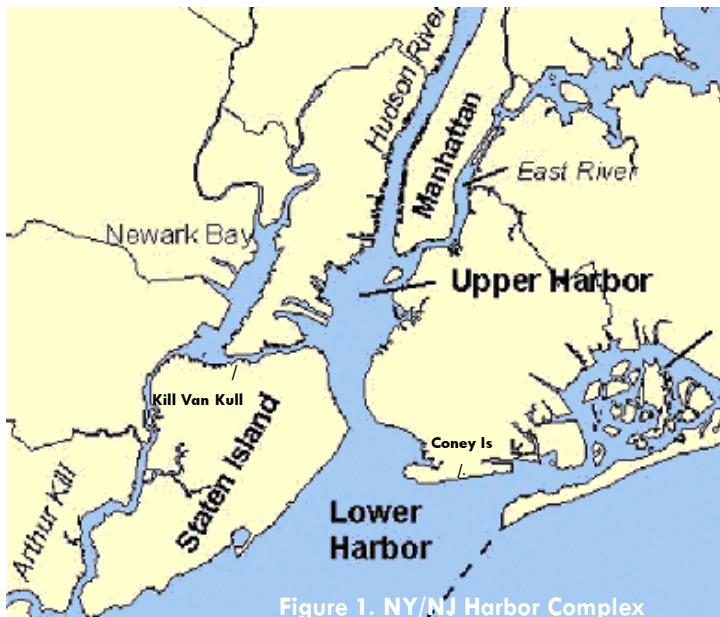


Figure 1. NY/NJ Harbor Complex

Floatable Surveillance Location

For purposes of this report, the New York/New Jersey Harbor Complex is defined as the following five waterbodies: 1) the Arthur Kill; 2) Newark Bay, as far north as the New Jersey Turnpike Bridge; 3) the Kill Van Kull; 4) the Upper New York Harbor, including the lower portions of the Hudson River and the East River as far north as Central Park, New York; and 5) the Lower New York Harbor including Gravesend Bay, and the shoreline of Coney Island as far east as the Marine Parkway Bridge (Figure 1).

Reportable Floatable Debris

For cleanup purposes, the Floatables Action Plan defined a significant "slick" as an aggregation of floating debris of indefinite width and a minimum length of approximately 400 meters (USEPA, 1989). Using this as a guideline, all slicks have been divided into three categories (from largest to smallest):

Major: any slick greater than 1600 meters in length
Heavy: 800 meters to 1600 meters
Moderate: 400 meters to 800 meters

2006 Floatable Observations

Twenty-one significant floatable slicks were observed in 2006. Newark Bay had the most slicks observed, nine, and the Kill Van Kull with zero slicks observed, had the least. Six slicks were reported in the Lower NY Harbor, 5 slicks in the Upper NY Harbor and 1 slick in the Arthur Kill.



Photo: EPA's Surveillance Helicopter

Trends – Floatable Sightings in the New York/New Jersey Harbor Complex

A total of 513 significant slicks was observed over an eighteen year period (Figure 2). The sightings of slicks were variable from year to year with the most number of slicks, 81 reported in 1990. The least number of slick sightings, six slicks, was reported in 1998. For unknown reasons, there was a significant increase in slick observations in 2004 followed by a decrease in 2005 and 2006. For the thirteen-year period, the majority of slicks observed, 53.6 percent was in the moderate category, 26.8 percent was in the heavy category, and 19.6 percent was in the major category (Figure 2).

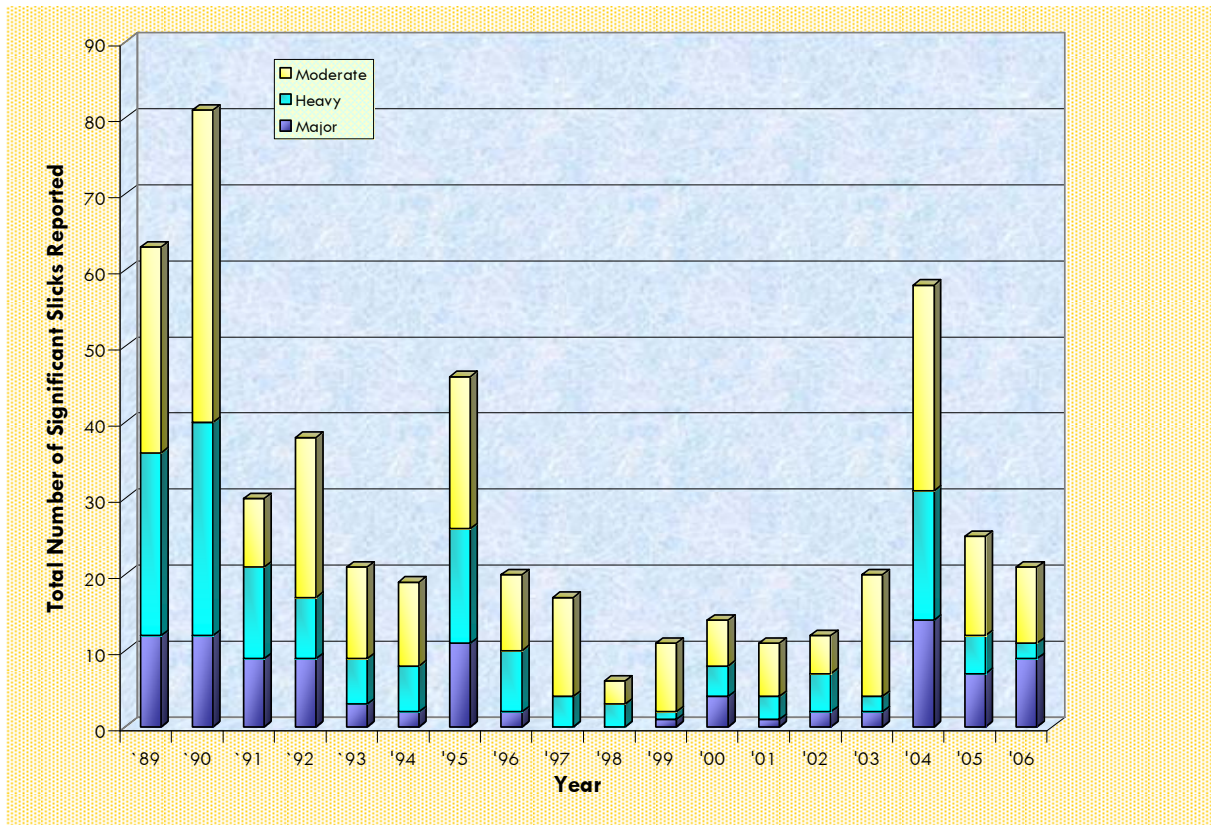


Figure 2. Trends of Floatable Observations by Size

Locational Subdivision

The Upper New York Harbor had the greatest number of slicks, 85, observed in the thirteen-year period. The Kill Van Kull, with 26 slicks, had the least number of slicks observed (Figure 3). During six of the thirteen years, the Upper New York Harbor had the most number of slicks observed per year.

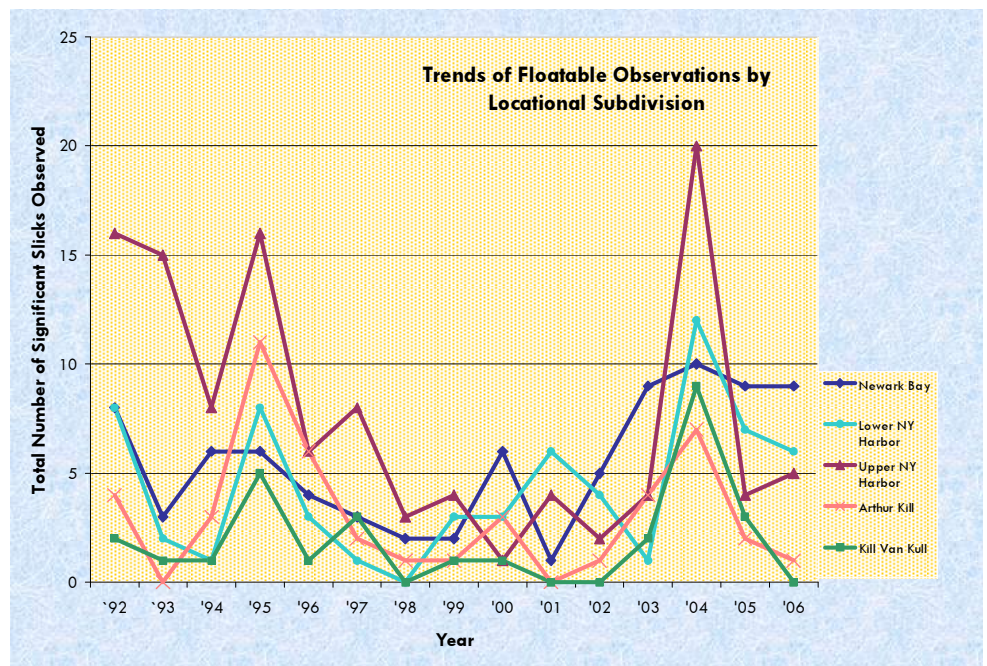


Figure 3. Trends of Floatable Observations by Locational Subdivision

Beach Closures

Before the Floatables Action Plan was initiated, New Jersey beaches were plagued with floatable washups responsible for closing 25 miles of beach in May 1987 and 50 miles of beaches in August 1987. In 1988, floatable washups were responsible for closing 60 miles of New York beaches. Since the initiation of the plan and its continued success, beach closures due to floatable debris have been minimal. Floatable washup can occur over various periods of time and affect several beaches. From 1989 to 2006, New York and New Jersey each experienced six floatable debris beach closure incidences (Figure 4). The following is an historical list of beach closures due to floatable debris:

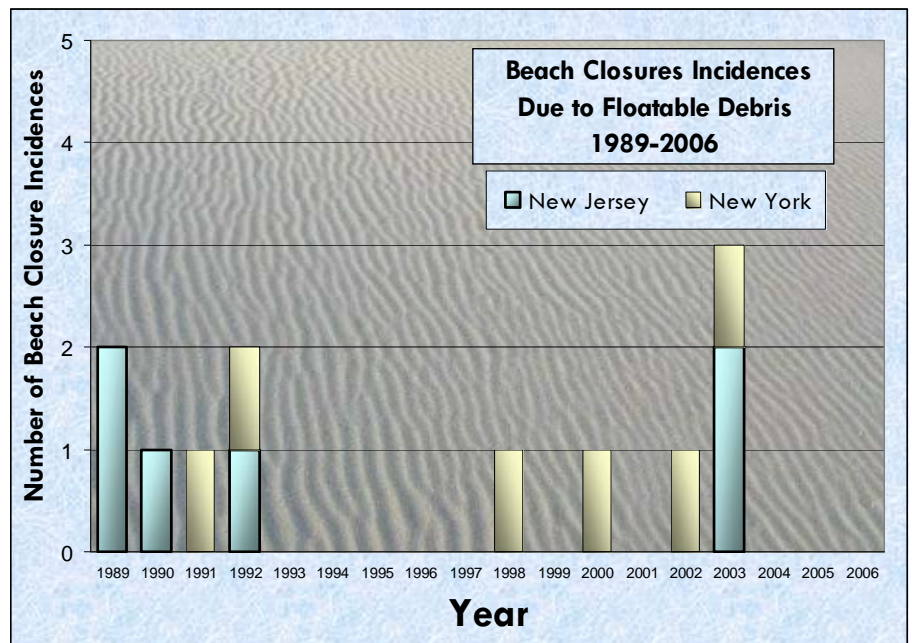


Figure 4. Beach Closure Incidences

- ✚ In 1989, several Ocean City, NJ beaches were closed on July 20, 1989 due the washup of medical debris. Several Sandy Hook, NJ beaches were closed on August 18 and 19, 1989 due to the washup of medical debris. In total, 9 closures occurred, accounting for two beach closure incidences.
- ✚ 1990: Ten Monmouth County, NJ beaches were closed due to floatables on June 26, 1990.
- ✚ 1991: Jacob Riis Park Beach, Brooklyn, NY was closed on August 31, 1991 due to the washup of medical waste.
- ✚ 1992: On July 22, 1992, a beach in Spring Lake, NJ was closed for a period of several hours due to a floatable debris washup. NJDEP does not regard this incident as an official designated bathing area closure due to its brevity. The Lawrence Beach Club in Atlantic Beach, NY was closed on July 20, 1992 due to the washup of medical waste.
- ✚ 1998: NY beaches: Rockaway, Midland, Wolfe's Pond, South and Coney Island Beaches were intermittently closed between July 26 and 29. During this period, medical debris was found on various stretches of beaches.
- ✚ 2000: Beaches in Nassau County, NY were closed along the Long Beach strip on August 7, 2000. A total of nine separate beaches (two in the Town of Hempstead and seven in the Village of Atlantic Beach) was closed due to the discovery of between 40-60 syringes.
- ✚ 2002: Beaches in Suffolk County, NY were closed from June 12-13 due to the washup of a raw liquid latex material (which solidified when it came into contact with water) found along a six mile stretch of Suffolk County from Moriches Inlet to Smith County Park.
- ✚ 2003: A total of 11 beaches (in Dover Township and in Lavallette, NJ) in a 1.5 mile section of beach was closed due to medical waste. This precautionary closing occurred at 4:30PM on July 11 and the beaches were opened by the next morning. The City of Long Beach (in Nassau County, NY) closed 4 areas of their beach (approximately 1000 feet of beach) due to medical syringes actively washing ashore. Beaches reopened by July 25, 2003. On July 26, 2003, the Village of Atlantic Beach, NY closed its East Atlantic Beach due to the active washup of a small number of medical syringes. This beach was reopened by July 27, 2003. The closings in Long Beach and in Atlantic Beach are considered one incident. Two beach closings in Ocean County (Deauville in Brick Twp. and the Normandy Beach Association in Dover, NJ) were closed in the afternoon because of a floatable debris washup. Some syringes were found, but most of the debris was street litter. Beaches were reopened the following morning.

Floatables Collection Trends

Figures 5 and 6 show a compilation of floatable debris collected by the interagency partners as listed in Table 1.

NJDEP's Clean Shores program collects an average of over 3,000 tons of debris each year, and the USACOE collects an average of over 5,000 tons of debris each year (Figure 5). A significant increase in the amount of floatables collected occurred from 1988 to 1989, due to the addition of the NJDEP Clean Shores program. However, in 1994 the Clean Shores program was cut in half due to funding and a slight decrease in floatable debris collection can be seen. In general, among the programs reporting, the amount of floatable debris collected remained steady over the past five years.

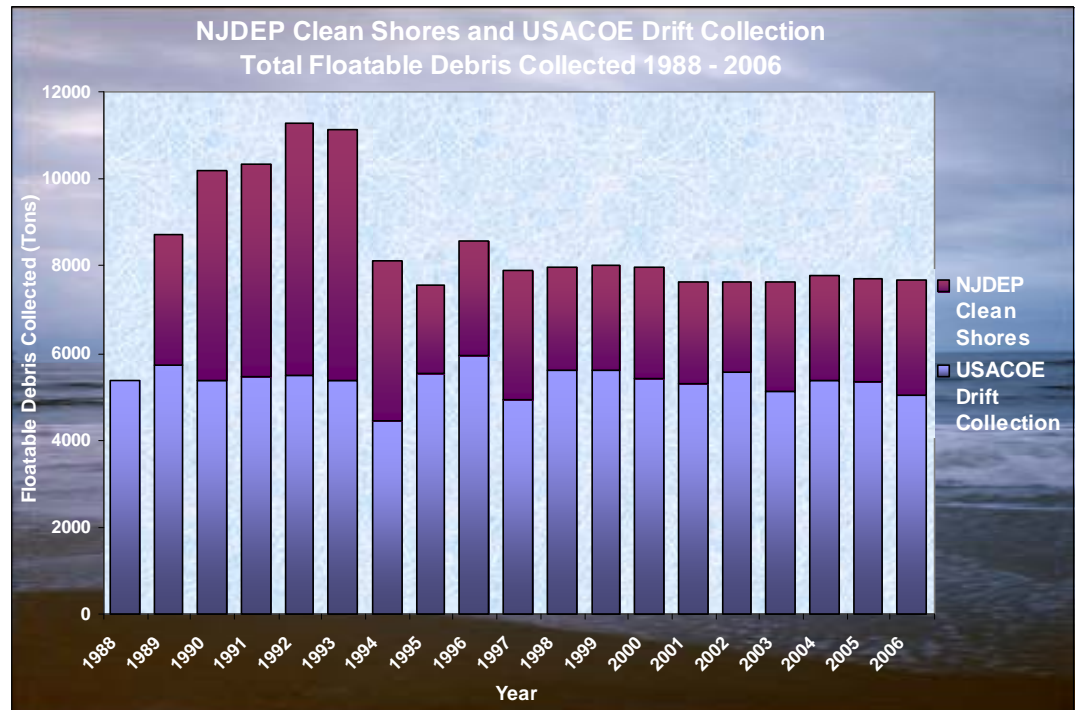


Figure 5. Major Players in Floatable Collection; NJDEP Clean Shores and USACOE Drift Collection, Total Floatable Debris Collected, 1988 – 2006.

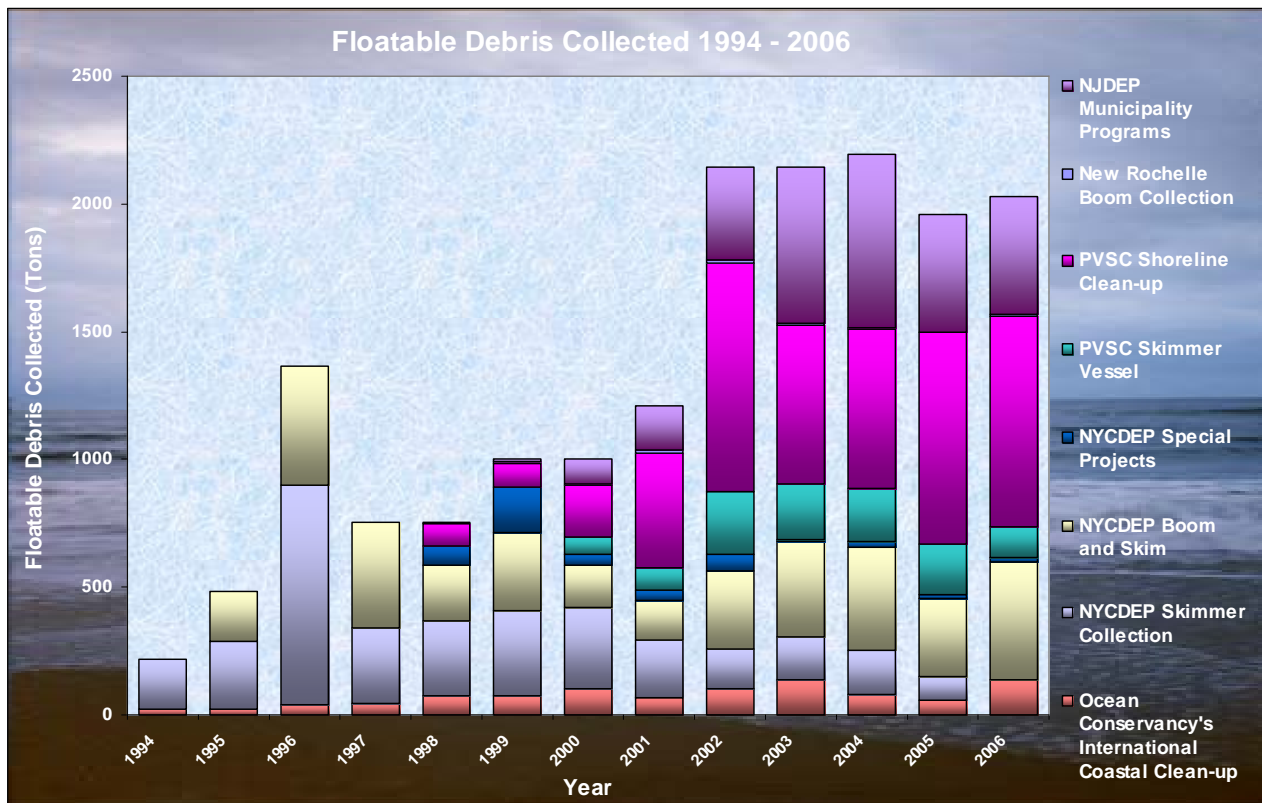


Figure 6. Floatable Debris Collected From 8 Participating Programs

Appendices

Appendix 1 – USACOE Drift Collection Vessel Information, USACOE Drift Collection Vessels Program

Appendix 2 – NYCDEP Skimmer Vessel Information, NYCDEP Vessel/ Boom and Skim Program/Special Project Program, Ocean Conservancy's International Coastal Clean-up Results for 8 New York Counties, New Rochelle, NY Boom Collection Data

Appendix 3 – New Jersey Department of Environmental Protection's (NJDEP) Clean Shores Program, Adopt A Beach Program Data, Passaic Valley Sewerage Commissioners (PVSC) Skimmer Vessels Collection Data, PVSC's Passaic River/Newark Bay Restoration Program: Shoreline Clean-up Element

Appendix 4 – Implementation Status of Floatables Abatement Programs of New Jersey Communities



Appendix 1

United States Army Corps of Engineers (USACOE) Drift Collection Vessel Information

Name of Vessel	Hayward	Driftmaster	Gelberman
Year Built	1974	1948	1980
Length (feet)	124	99	85
Weight (tons)	390.4	230	190.17
Crane Capacity (tons)	20	18	4.5

USACOE Drift Collection Vessels Program Collection Totals

Fiscal Year	Total Drift Collection (Cubic Feet)	Total Drift Collection (Cubic Yards)	Estimated Total Drift Collection (Tons)
1988	537,353	19,902	5,374
1989	571,645	21,172	5,716
1990	537,770	19,917	5,378
1991	544,350	20,161	5,444
1992	548,970	20,332	5,490
1993	539,355	19,976	5,394
1994	442,615	16,393	4,426
1995	552,840	20,476	5,528
1996	592,450	21,943	5,925
1997	493,400	18,274	4,934
1998	558,900	20,700	5,589
1999	560,575	20,762	5,606
2000	539,930	19,997	5,399
2001	528,875	19,588	5,289
2002	557,050	20,631	5,571
2003	512,350	18,976	5,124
2004	536,200	19,859	5,362
2005	534,210	19,786	5,342
2006	504,200	18,674	5,042
TOTAL	10,193,038	377,519	101,933

Appendix 2

New York City Department of Environmental Protection (NYCDEP) Skimmer Vessel Information

Name	Where Used	Length (feet)	Capacity
SV Piping Plover	Tributaries	50	3,000 -12,000 lbs of wet material
SV Ibis	Tributaries	50	3,000 -12,000 lbs of wet material
SV Jamaica Bay (new in 2005)	Tributaries	50	3,000 -12,000 lbs of wet material
SV Egret	Tributaries	50	3,000 -12,000 lbs of wet material
SV Cormorant	Open Waters	100	2 nets; 1,000 cubic feet per net;; up to 10 tons of wet material per net

NYCDEP Vessel/ Boom and Skim Program/Special Project Program, Ocean Conservancy's International Coastal Clean-up Results for 8 New York Counties, New Rochelle, NY Boom Collection Data

Year	NYCDEP SV Cormorant (Tons)	NYCDEP Boom and Skim Program				NYCDEP's Special Project Program (Cubic Yards)	Ocean Conservancy's International Coastal Clean-up Results for 8 New York Counties (Pounds/Miles)	New Rochelle Boom Collection Totals (Cubic Feet)
		Zone I Jamaica Bay (Cubic Yards)	Zone II/III East River Newtown Creek Buttermilk Channel (Cubic Yards)	Zone IV Upper East River Flushing/ Bowery Bays (Cubic Yards)	Annual Total for Zone 1, 2 and 3			
1994	197.87	---	---	---	---	---	42,622 lbs/82.10 miles	---
1995	262.2	258.5	123	353	734.5	---	46,001 lbs/98.75 miles	---
1996	856.2	732.5	195.5	801.5	1729.5	---	83,533 lbs/108.60 miles	---
1997	294.00	657.5	222	657	1536.5	---	95,201 lbs/168.97 miles	---
1998	296.4	331.5	65	418.5	815	280	145,705 lbs/194.00 miles	548
1999	333.40	324.25	116	676.5	1116.75	680	153,507 lbs/162.4 miles	953
2000	320.00	138	124.75	351	613.75	160	202,553 lbs/233.2 miles	483
2001	222.15	133	140.5	309	582.5	140	142,632 lbs/159.0 miles	857
2002	157.49	397.5	130.25	592.5	1120.25	240	204,078 lbs/198.83 miles	1080
2003	166.04	426.0	306.25	648.0	1380.25	20	277,972 lbs/264.75 miles	680
2004	171.27	445.0	120.25	928.5	1493.75	80	165,861 lbs/185.59 miles	379
2005	94.80	249.0	109.8	772.0	1130.8	60	115,012 lbs/235.95 miles	295
2006	0.00	293.0	147.5	1278.0	1718.5	60	228,467 lbs/216.52 miles	124
Total	3371.82	4385.75	1800.75	7785.5	13,972.0	1720	1,946,834	5399

--- = prior to program initiation

Appendix 3

**New Jersey Department of Environmental Protection's (NJDEP) Clean Shores Program,
Adopt A Beach Program Data
Passaic Valley Sewerage Commissioners (PVSC) Skimmer Vessels Collection Data,
PVSC's Passaic River/Newark Bay Restoration Program: Shoreline Clean-up Element**

Year	Clean Shores Program (Tons of Floatable Debris Collected/ NJ Shore Miles Addressed)	NJDEP's Adopt A Beach Program (Number of Debris Items Collected)	PVSC Skimmer Vessels (SV Newark Bay-50ft , SVPassaic River-32ft) Collection Data (Tons)	PVSC's Passaic River/Newark Bay Restoration Program: Shoreline Clean-up Element (Tons)
1989	3000 tons /24 miles	---	---	---
1990	4800 tons/ 48 miles	---	---	---
1991	4900 tons/74 miles	---	---	---
1992	5800 tons/85 miles	---	---	---
1993	5750 tons/71 miles	36,122	---	---
1994	3700 tons/62 miles	69,221	---	---
1995	2050 tons/80 miles	93,016	---	---
1996	2650 tons/103 miles	78,282	---	---
1997	2953 tons/146 miles	84,433	---	---
1998	2400 tons/138 miles	120,307	---	85.6
1999	2400 tons/182.4 miles	59,247		88.7
2000	2563 tons/114.9 miles	64,696	68	203
2001	2352 tons/172.3 miles	79,670	86	451
2002	2080 tons/151.2 miles	80,205	248	895
2003	2524 tons/107.8 miles	50,437	221	621
2004	2410 tons/131.3 miles	57,663	210	620
2005	2352 tons/118.8 miles	30,943	196	826
2006	2646 tons/155.3 miles	17,421	119	828.4
TOTAL	57,330 tons	921,663	1148	4618.7

--- = prior to program initiation

Appendix 4

NJDEP Municipality Floatable Debris Collection Programs

(Collection Totals in Tons)

Municipal Entity (Total # of CSO Points)	Type of Solids/ Floatables Control	1999	2000	2001	2002	2003	2004	2005	2006	Total To Date (Ton)
Bayonne (30)	Bar screens, in-line netting and end-of pipe netting and floating net facilities		10.1	25.0	89.2	127.2	90.5	101.4	114.9	558.3
Elizabeth (28)	Bar screens and In-line netting				78.4	194.8	211.5	125.9		610.6
Fort Lee (2) AND Edgewater MUA (1)	In-line netting; receives flow from the Edgewater MUA service area		2.2	9.9	11.6	32.3	36.6	9.5	10.2	112.3
Guttenburg (1)	In-line netting completed			2.0	6.4	5.5	4.6	2.6		21.1
Harrison (7)	In-line netting		13.0	17.0	20.2	28.5	60.67	23.71		163.1
Jersey City MUA (22)	In-line netting and end-of-pipe netting under development; 19 CSO points complete				33	46	87.2	100.2	191.2	457.6
North Bergen Twp. MUA- Central (9) North Bergen Twp. UA- Woodcliff (1)	In-line netting, end-of pipe netting, floating TrashTrap, static bar rack	5.0	30.5	43.5	37.5	29.6	36.77	29	42.1	254.0
Newark (30)	Screens and end-of pipe netting				14.2	12.4	15.75	14	20.16	76.51
Paterson (31)	Under development; final plan will involve in-line netting, end-of-pipe netting and screens: as of 9/06, 8 operational netting facilities and 4 romag screens.							5.57	4.13	9.70
Perth Amboy (17)	In-line Netting		17.3	47.3	49.4	24.8	16.5	12.6	15.5	183.4
North Hudson SA; North Hudson SA River Road Plant 12 total CSO points being combined to 9. 6 facilities have completed	Under development; final plan will involve bar screen and CDS technology facilities. Note: Prior to 2005, no method was employed to segregate wet weather amount of debris collected from total debris collected, so the total for 2003 and 2004 are inflated.					80	104	14.26	33.89	232.2
Ridgefield Park (6)	In-line Netting and end-of-pipe netting	1.5	25.8	28.1	22.8	29.0	17.1	18.4	28.93	171.63
TOTALS (in tons)	-----	7	99	173	363	610	681	457	461	2851

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