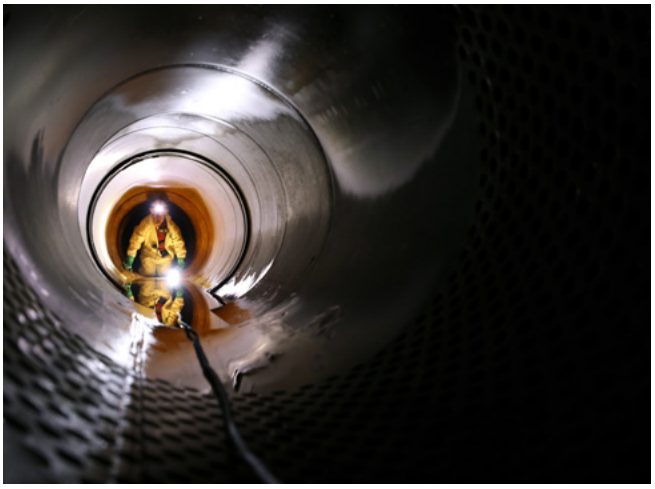
NYC Stormwater Management Program

2022 MS4 Annual Report



NYC

Municipal Separate Storm Sewer Systems of New York City
SPDES Number: NY-028789

Contents

Flushing Bay at World's Fair Marina

Humpback Whale in NY Harbor

Background

Pursuant to the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Municipal Separate Storm Sewer System (MS4) Permit (No. NY-0287890), first issued to the City of New York (City or NYC) in 2015 and renewed as of August 1, 2022, the City implements a Stormwater Management Program (SWMP) Plan,[1] which sets forth the City's measures to reduce pollution in stormwater runoff discharging into and from the MS4.

Through proper management and increased awareness, the City works to keep our streets and facilities well-maintained to reduce the risk of stormwater runoff's contributing pollution to NYC's waterbodies. As most waterbodies in NYC receive stormwater from both the combined and separate sewer systems, the SWMP is an important component of the City's comprehensive integrated planning approach to protecting and improving our waterbodies.

Building on these investments, fourteen City agencies now implement the SWMP in the areas served by the City's MS4, which carries stormwater runoff directly to nearby waterbodies instead of to a wastewater resource recovery facility (WRRF) for treatment; water that flows on the streets and into catch basins or directly into waterbodies may carry pollution such as pathogens and debris.

Each year, the City prepares an MS4 annual report, as required by Part IV.M of the MS4 Permit, to inform NYSDEC and the public of the City's progress in implementing the SWMP and the status of its compliance with the MS4 Permit. This MS4 Annual Report, covering January 1 through December 31, 2022, includes a brief description of the SWMP activities completed during the 2022 reporting year, measurable goals, and specific reporting requirements included in the MS4 Permit. If applicable, this report also includes activities planned for the 2023 calendar year and any proposed changes to the SWMP.

New York City's iconic waterfront and beloved waterbodies are cleaner and healthier than they have been since the 1860s. Whales and seals are returning to the harbor, wetland and mussel restoration projects are thriving, and New Yorkers are enjoying recreational activities in our local waterways. These improvements are in no small part a testament to the City's substantial investments in upgrading our wastewater infrastructure over the last five decades.

1 https://www1.nyc.gov/assets/dep/downloads/pdf/water/stormwater/ms4/nyc-swmp-plan-full.pdf

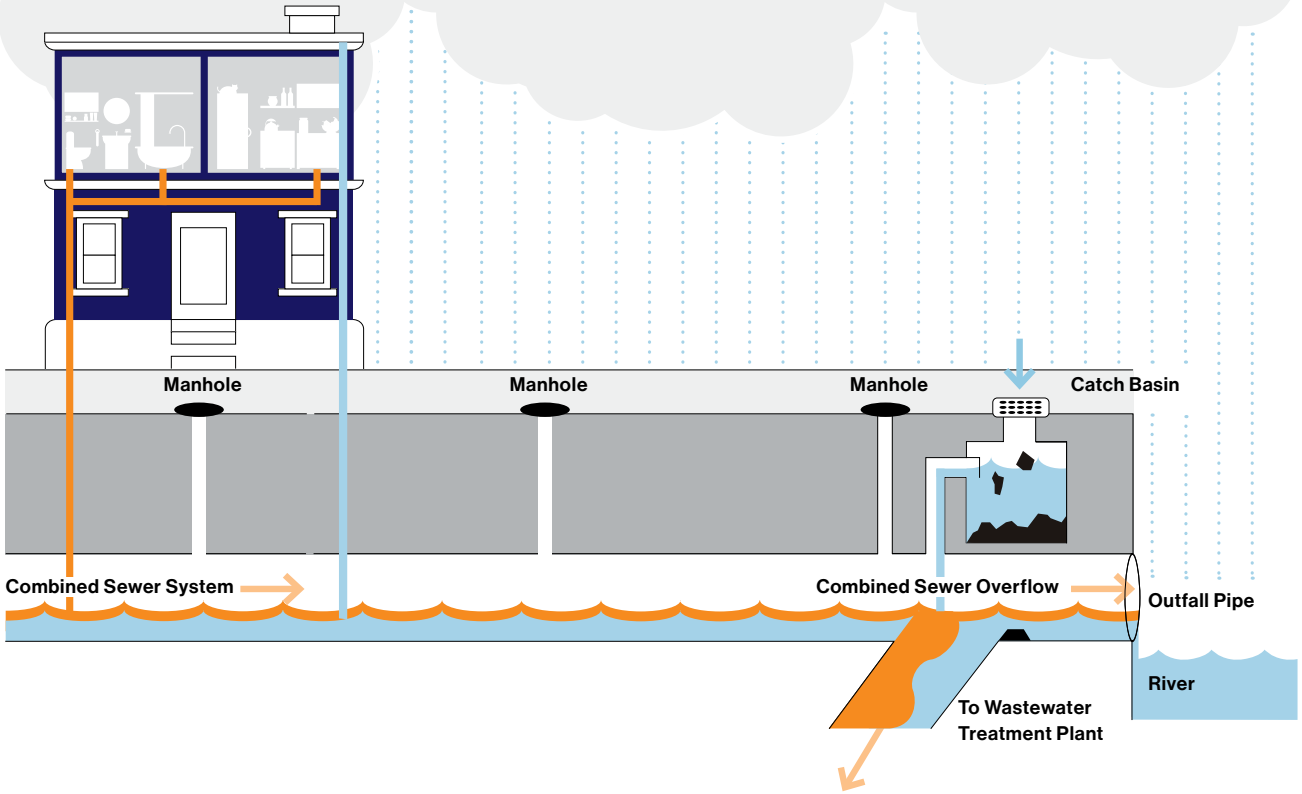
Plumb Beach, Brooklyn

Introduction

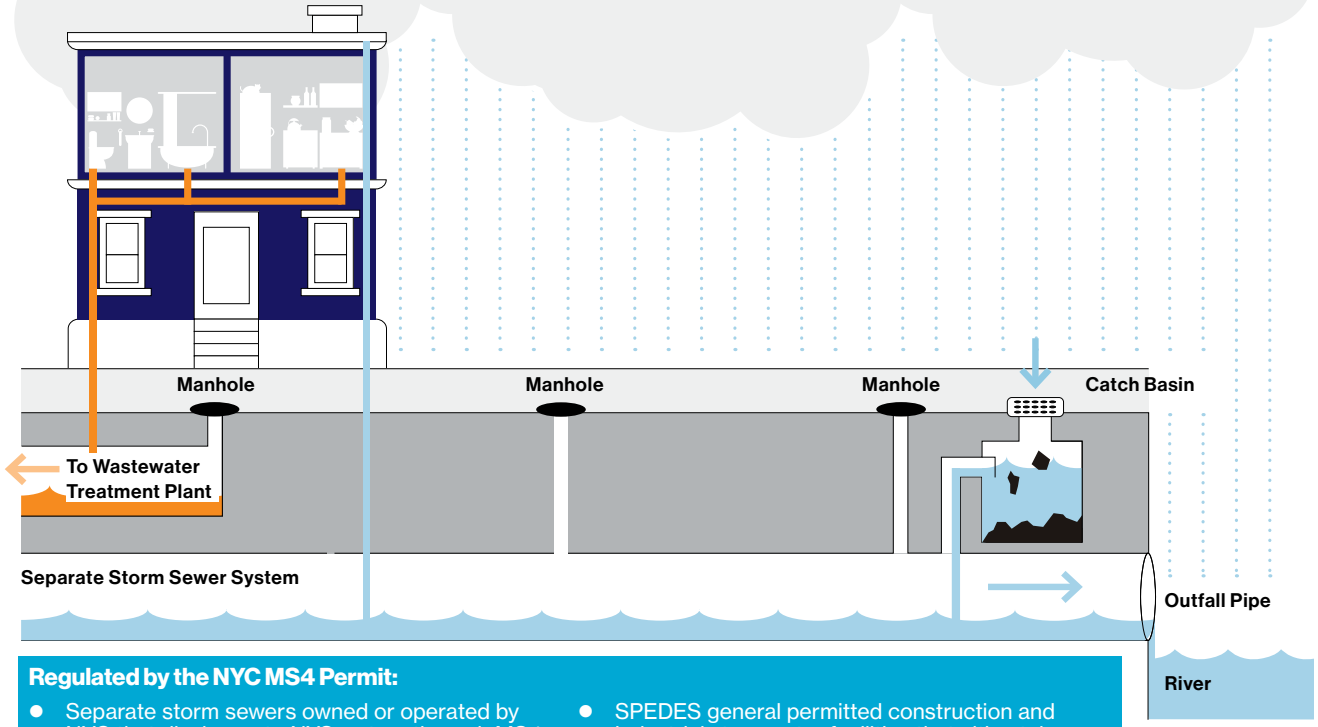
Each component of the SWMP Plan includes best management practices (BMPs) and associated measurable goals, which the City reports on annually. The City periodically refines the measurable goals based on lessons learned from implementation of the programs, interagency working groups, and public input. Continuing to refine and update the measurable goals allows the City to better quantify and more accurately represent the effectiveness of the SWMP. The City bases its assessment of the effectiveness of the SWMP on the achievement of the stated measurable goals for each program.

In the fall of 2022, the City undertook a holistic update of the SWMP to reflect the current status of program implementation and the City's compliance with the 2022 MS4 Permit. Notable revisions included updating the Illicit Discharge, Detection and Elimination (IDDE) and Pollution Prevention and Good Housekeeping (PPGH) sections to reflect changes to the MS4 Permit.

Combined Sewer System



Municipal Separate Storm Sewer System



Regulated by the NYC MS4 Permit:

- Separate storm sewers owned or operated by NYC that discharge to NYS waters through MS4 outfalls or that connect to combined sewer outflow pipes downstream of the regulator owned or operated by NYC,
- High level storm sewers and Bluebelts that ultimately discharge to waters of NYS through MS4 outfalls owned or operated by NYC,
- SPEDES general permitted construction and industrial stormwater facilities that ultimately discharge to waters of NYS through MS4 outfalls and combined sewer overflow pipes downstream of the regulator owned or operated by NYC,
- NYC municipal operations and facilities that drain to overland flow of NYS.

Administration of the SWMP

The individual designated to act as the liaison between the City and NYSDEC for the implementation of this permit is:

Pinar Balci, PhD

Assistant Commissioner,
Bureau of Environmental Planning and Analysis

59-17 Junction Blvd
Flushing, NY 11373

pbalci@dep.nyc.gov

The New York City Department of Environmental Protection (DEP) coordinates the implementation of the SWMP with the assistance of and contributions from the Stormwater Controls Working Group. The Stormwater Controls Working Group is a team of representatives from the following New York City agencies that collaborate on MS4 programs (a subset of these agencies has obligations under the MS4 Permit):

Agencies with MS4 Permit Obligations

- Department of Citywide Administrative Services (DCAS)
- Department of City Planning (DCP)
- Department of Design and Construction (DDC)
- Department of Environmental Protection (DEP)
- Department of Buildings (DOB)
- Department of Correction (DOC)
- Department of Education (DOE)
- Department of Health and Mental Hygiene (DOHMH)
- Department of Transportation (DOT)
- Department of Parks and Recreation (Parks)
- Department of Sanitation (DSNY)
- Fire Department (FDNY)
- Police Department (NYPD)
- Small Business Services (SBS)

Collaborators

- NYC Law Department (LAW)
- Economic Development Corporation (EDC)
- Mayor's Office of Management and Budget (OMB)
- Mayor's Office of Climate and Environmental Justice (MOCEJ)

MS4 Annual Reports

Each year, the City reports on SWMP implementation and MS4 Permit compliance. Reporting years are full calendar years (January 1 to December 31). The MS4 annual reports reflect the structure of the City's MS4 Permit and the SWMP Plan, both of which are organized by program. For each program, these MS4 annual reports include the following sections:

- **Introduction**. This section includes an overview of the program and context for the activities completed within a reporting year. For more information on the programs, refer to the SWMP Plan.
- **Program assessment.** This section includes information on activities completed during the reporting year. Tables that present the measurable goals and measures of a program for the reporting year are complemented by a narrative that highlights and explains important activities.
- **Goals for the next reporting cycle.** This section includes the City's aspirations for applicable programs during the next reporting cycle.
- **Program updates.** This section includes information on SWMP updates that the City is proposing as part of refining and adapting its program. The program updates section does not appear if no changes are required for a program. The City updates the SWMP Plan text annually but implements as soon as practicable any necessary changes identified during the reporting year.

Every spring, the City publishes a draft MS4 Annual Report online for public comment and holds a public meeting during the comment period. Following the public review of the draft MS4 Annual Report, the City revises the Report, as needed, and includes responses to public comments. The final version of the Report is due to NYSDEC on September 30 of each year. The MS4 Annual Reports are available on the DEP website.[2]

2 https://www1.nyc.gov/site/dep/water/municipal-separate-storm-sewer-system.page

Launch of Harbor Protectors Program in Coney Island

Public Education and Outreach

The City implements a public education and outreach program (PEO Program) as part of its MS4 Permit obligations.[3] The PEO Program has many education and outreach initiatives that inform a broad range of stakeholders and the public about stormwater, the sources of pollutants associated with stormwater, and stormwater's potential impacts on water quality.

2022 Program Assessment

As part of the PEO Program, the City implemented 14 programs that included more than 1,700 events, 48,000 individuals, and the distribution of approximately 2,000,000 materials. These metrics are drawn from activities conducted citywide.

Program Highlights

Environmental Education. Through the NYC Department of Design and Construction's Town+Gown Program, DEP partnered with the Fashion Institute of Technology to design a new educational resource. Drippy's Water Adventure is an engaging coloring book with activities, vocabulary and concepts highlighting NYC's extensive water and wastewater infrastructure. The coloring book illustrates water use, the City's wastewater treatment system, stormwater management and green infrastructure, harbor protection and stewardship opportunities. The coloring book will be available in print and online in Spring 2023.
DEP continued to enhance, distribute, and workshop the following three educational resources, which were shared with thousands of educators citywide.

- **Understanding NYC's Water Story: A Curriculum Guide for the Classroom.** This comprehensive guide for K-8 teachers explores various content related to our shared water resources. The guide includes six units and features a variety of lessons and activities to enhance teaching styles and learning about the New York City water cycle. These lessons and activities are centered on science, technology, engineering, and math (STEM) concepts and humanity subjects, and are designed to support an interdisciplinary, hands-on approach to teaching.
- **NYC Water Virtual Tours.** Designed using ArcGIS StoryMaps, these virtual tours offer a collection of historical imagery, in-the-field footage, interactive maps, and staff interviews for a fun and easy way to discover the New York City drinking water supply, sewer system, wastewater treatment system, and harbor protection.
- **Jamaica Bay Education Resource Directory.** This updated guide provides an important teaching tool for educators and features partner organizations and educational opportunities, such as resources and program opportunities in and around the Jamaica Bay watershed.

Harbor Protectors. This innovative stewardship program recruits volunteers from schools and community groups to participate in activities such as clearing off catch basin gratings, stenciling educational/informational messages on the sidewalks near catch basins, caring for rain gardens and participating in shoreline cleanups. In addition to beautifying communities and keeping pollution out of NYC's waterways, these stewardship actions also aid DEP in its critical mission to protect and improve water quality across the five boroughs. The Harbor Protectors program hosted 2 events with more than 160 participants.

3 https://www.nyc.gov/site/dep/environment/education-programs.page

SAFE Disposal Events. Safe Disposal events provide a designated location for New Yorkers to dispose of waste, including harmful household products. These events help the City reduce the risk of pollution in stormwater runoff through trash management and illegal dumping prevention. The City distributed more than 4 million mailers to residents and held 10 events covering all NYC boroughs with more than 20,000 participants.

Urban Park Ranger Programs. NYC Parks Urban Park Rangers offered to approximately 12,000 participants, through several programs, more than 500 events focused on ecology, stormwater, and waterbodies. These programs include The Natural Classroom: People, Place and Parks for school groups; Custom Adventures for summer camp and youth groups; and free Weekend Adventures and Pop-Up Adventures for the public. Each park in New York City is unique and is shaped by its natural features, the plants and animals that live there, and the communities it serves. Through these programs students enjoy exploring these unique urban spaces through active and engaging on-site learning experiences that highlight real-world examples of concepts, ideas, and content learned in the classroom.

During the educational tours, students investigate the diversity of parks and green spaces in the City, how these spaces improve the daily lives of New Yorkers, and how NYC Parks maintain the parks and recreational spaces. Over the years, these types of immersive, on-site outdoor environmental programs have been shown to advance academic achievement, build character, promote wellness and good health, cultivate environmental stewardship, and foster community and ecological resilience.

Goals for 2023

The City will continue to implement the programs listed as "planned" in Table 1, including Harbor Protectors, SAFE Disposal events, and various environmental education programming. DEP will also continue to collaborate with other agencies on outreach and MS4-related materials. The City plans to fully resume PEO programs and incorporate in-person and virtual programing moving forward. The City will also continue to develop educational materials and will increase our efforts to collaborate with stakeholders.

Table 1 lists measurable goals, measures, and the status of the City's implementation of each Public Education and Outreach BMP.

Staten Island Juvenile Eel Count

Enhanced Exhibit at Newtown Creek Visitor Center

Battery sorting at a SAFE Disposal Event

Table 1: Public Education and Outreach 2022 Status of Implementation

BMP	Measurable Goals	Measures	Status
Provide an ongoing public education and awareness program	Develop, implement, and assess an ongoing public education and outreach program	List of education and outreach programs/ events and relevant metric(s) for each (e.g., number of participants, events, or materials distributed)	• Adopt-a-Highway/Greenway (80 materials distributed) • Annual Art and Poetry Contest (3 events; 2,244 participants) • Automotive Association Outreach (1 event; 5 businesses contacted) • DEP Environmental Education (61 events; 6,252 participants; 15,000 materials distributed) • Parks Environmental Education (10 events; 4,550 participants) • Forgot Your Bag? (231 canine waste dispensers in the MS4 area) • Harbor Protectors (2 events, 160 participants) • SAFE Disposal Events (10 events; 20,678 participants: 4,378,751 materials distributed) • "Trash it, Don't Flush It Outreach (7,888 households contacted) • Urban Park Rangers Natural Classroom (547 events; 12,133 participants) • Visitor Center at Newtown Creek (160 events; 4,227 participants) • Weekend, Pop-up, and Custom Adventures (274 events; 3,651 participants)
		List of planned educational and outreach programs/ activities to be undertaken in the next reporting cycle	• Annual Art and Poetry Contest • Automotive Associations Outreach • DEP Environmental Education • Forgot Your Bag? • Harbor Protectors • SAFE Disposal Events • "Trash It, Don't Flush It" Outreach • Urban Park Rangers Natural Classroom • Visitor Center at Newtown Creek • Weekend, Pop-up and Custom Adventures
	Develop and implement educational and informational activities related to illicit discharges for businesses and the public	List of education and outreach programs/ events and relevant metric(s) for each (e.g., number of participants, events, or materials distributed)	• Annual Art and Poetry Contest (3 events; 2,244 participants) • Automotive Association Outreach (1 event; 5 businesses contacted) • Community Clean-ups (360 events) • DEP Environmental Education (61 events; 6,252 participants; 15,000 materials distributed) • Parks Environmental Education (6 events; 4,350 participants) • Forgot Your Bag? (231 canine waste dispensers in the MS4 area) • Harbor Protectors (2 events, 160 participants) • Park Stewardship (347 events; 4,296 participants) • SAFE Disposal Events (10 events; 20,678 participants: 4,378,751 materials distributed) • "Trash it, Don't Flush It" Outreach (7,888 households contacted) • Urban Park Rangers Natural Classroom (547 events; 12,133 participants) • Visitor Center at Newtown Creek (160 events; 4,227 participants) • Weekend, Pop-up, and Custom Adventures (274 events; 3,651 participants
		List of planned educational and outreach programs/ activities to be undertaken in the next reporting cycle	• Annual Art and Poetry Contest • Automotive Associations Outreach • Community Clean-ups • DEP Environmental Education • Forgot Your Bag? • Harbor Protectors • Park Stewardship • SAFE Disposal Events • "Trash It, Don't Flush It" Outreach • Urban Park Rangers Natural Classroom • Visitor Center at Newtown Creek • Weekend, Pop-up and Custom Adventures
Facilitate public reporting of illicit discharges	Promote, publicize, and facilitate public reporting of illicit discharges and potential water quality impacts	Summary of public reports received by 311	The City received 10,312 service requests for the 311 complaint types listed in this report as relevant to stormwater pollution.

* These metrics reflect activities conducted citywide.

Trout release at Cross River with Samara School, Bronx

Public Involvement and Participation

Involving the public in the implementation of the SWMP is a fundamental requirement of the City's MS4 Permit. Whether it is NYC residents who enjoy recreation in local waterbodies, real-estate developers who build in the MS4 area, groups who organize waterbody cleanups, or environmentalists who advocate for a healthier harbor, there is a wide range of stakeholders who participate in the City's efforts to improve water quality.

2022 Program Assessment

The City continued to engage the public using virtual platforms, including on SWMP implementation. DEP published the draft 2021 MS4 Annual Report (which covered activities completed in 2021) on the DEP website and hosted the 2021 MS4 Annual Report meeting as a webinar in May 2022. The public was encouraged to provide comments on the draft MS4 Annual Report. These comments were addressed in Appendix 1 of the final 2021 MS4 Annual Report submitted to NYSDEC on September 30, 2022 and published on the DEP website.

Goals for 2023

The City plans to continue engaging with local stakeholder groups and participating in community events. In compliance with MS4 Permit requirements, the City also plans to publish, present, and respond to comments on this Annual Report.

Table 2 lists measurable goals, measures, and the status of the City's implementation of Public Involvement and Participation BMPs.

The City published this draft MS4 Annual Report on the DEP website on June 2, 2023. This report covers SWMP implementation for the 2022 calendar year. The City will host the MS4 Annual Report meeting at 4:00 pm on June 13, 2023. The public is encouraged to submit comments from June 2, 2023, through July 13, 2023, by email to MS4@dep.nyc.gov.

Table 2. Public Involvement and Participation 2022 Status of Implementation

BMP	Measurable Goals	Measures	Status
Provide and promote the opportunity to report and receive stormwater information	Identify mechanism for public to report and request stormwater-related information including contact process to receive and respond to requests	Summary of public reports and requests received by MS4@dep.nyc.gov	The City responded to inquiries on various SWMP activities including construction/ post-construction permitting, potential construction projects, USWR and general stormwater discharge inquiries.
Provide public opportunity to participate in SWMP implementation	Seek public input on SWMP implementation and provide public access to Annual Reports	Date and location of draft Annual Report posted for public review and comment period	On May 23, 2022, the City posted on the DEP website the draft 2021 MS4 Annual Report, which was available for public comment through July 1, 2022.
		Date and time of draft Annual Report stake-holder meeting and number of participants	June 1, 2022, at 4:00 pm. Approximately 80 individuals registered. (This was a webinar per COVID restrictions.)
		Summary of comments received on draft Annual Report and City responses	See Appendix 1 of 2021 MS4 Annual Report
		List of involvement and participation activi-ties (e.g., programs, events, key stakeholder meetings)	• 2021 MS4 Annual Report (1 event, 80 participants) • Stormwater Construction Permit Implementation (1 event, 47 participants) • USWR Briefing (1 event, 4 participants) • USWR Outreach for HPD (1 event, 30 participants) • USWR Outreach for Contractors (AGCNYS) (1 event, 40 participants) • Community Clean-ups (360 events) • Park Stewardship (347 events; 4,296 participants)
		Status and location of final Annual Report and the SWMP Plan	The SWMP Plan and final MS4 Annual Reports are available at www. nyc.gov/dep/ms4
		List of planned participation and involvement programs/ activities to be undertaken in next reporting cycle	• Presentation of this 2022 MS4 Annual Report • Community Clean-ups • Park Stewardship

311 is New York City's main source of government information and non-emergency services.

It provides the public with quick, easy access to all New York City government services and information. The public may connect with 311 24 hours a day, 7 days a week, 365 days a year by:

- Visiting 311 online at nyc.gov/311;
- Calling 311 or (212) NEW-YORK, (212) 639-9675, from outside New York City;
- Texting 311-692;
- Downloading the NYC 311 mobile app for Apple or Android devices; or
- Tweeting to @nyc311

311 is accessible to non-English speakers, available online in over 50 languages and by phone in over 170 languages.

311 facilitates transparency and accountability. Service requests and agency responses are available to the public as open data online.

Currently, the public can use 311 to access information on many topics relevant to stormwater pollution and water quality. The public is also encouraged to use 311 to report information relevant to stormwater pollution. Through 311, the public can report:

- **Waterway Complaint.** Report floatables, trash, oil, gasoline, sewage, or an unusual color in a waterway; report a potential illicit discharge from an MS4 outfall.
- **Dry Weather Sewage Discharge Complaint.** Report water flowing through a sewer outfall pipe during dry weather.
- **Dumping in Catch Basin or Sewer.** Report grease, gasoline, natural gas, cement, oil, sewage, chemicals, or other liquids going into a sewer or catch basin.
- **Oil Spill.** Report an oil spill.
- **Illegal Dumping Complaint.** Report the dumping of large amounts of trash.
- **Catch Basin Complaint.** Report a storm drain that is missing its cover, clogged, sunken, raised, damaged, or defective.

Mapping

The City maintains a GIS-based map of the urbanized area and its MS4 outfalls. The map includes each of the requirements listed in the 2022 MS4 Permit (see IV. Stormwater Management Program Requirements (C) (2) (a-h)). The City has several programs that document and map important information about NYC, including all of its outfalls and drainage areas. Much of the information gathered by these programs is available to the public through NYC Open Data at opendata.cityofnewyork.us.

As required by the 2015 MS4 Permit, the City submitted with the SWMP Plan the Preliminary MS4 Map, which showed the MS4 drainage areas and outfalls known as of August 1, 2018. The 2015 MS4 Permit further required the City to update and submit, along with supplemental information relevant to stormwater management, the final MS4 map of the permit cycle on August 1, 2020. The next update of the MS4 map will be due on August 1, 2027, 5 years from the effective date of the current 2022 MS4 permit.

Program Assessment

The current MS4 Map (as submitted to NYSDEC on August 1, 2020) is available to the public in an interactive format at www.nyc.gov/dep/ms4map. The Map includes 764 outfalls, more specifically 693 MS4 outfalls and 71 CSO outfalls with MS4 connections.

As stated in the SWMP Plan, GIS datasets are dynamic and change over time as updates are received and processed. As a result, the MS4 Map may be periodically updated as new information becomes available.

Table 3: Mapping Program 2022 Status of Implementation lists measurable goals and measures with the implementation status of the City's Mapping BMPs.

Wildlife in Jamaica Bay

Table 3. Mapping Program 2022 Status of Implementation

BMP	Measurable Goals	Measures	Status
Map the MS4 area	Final Map required by 2015 MS4 Permit submitted August 1, 2020	Status and location of the MS4 Map	The MS4 Map is online and available to the public at nyc.gov/dep/ms4map
		Number and percent of MS4 outfalls mapped	764 outfalls mapped; 93%
	Update MS4 Map 5 years from EDP	Date of latest updated MS4 Map	Current map dated 8/1/20; updated map due August 1, 2027

2020 MS4 Drainage Areas and Outfalls

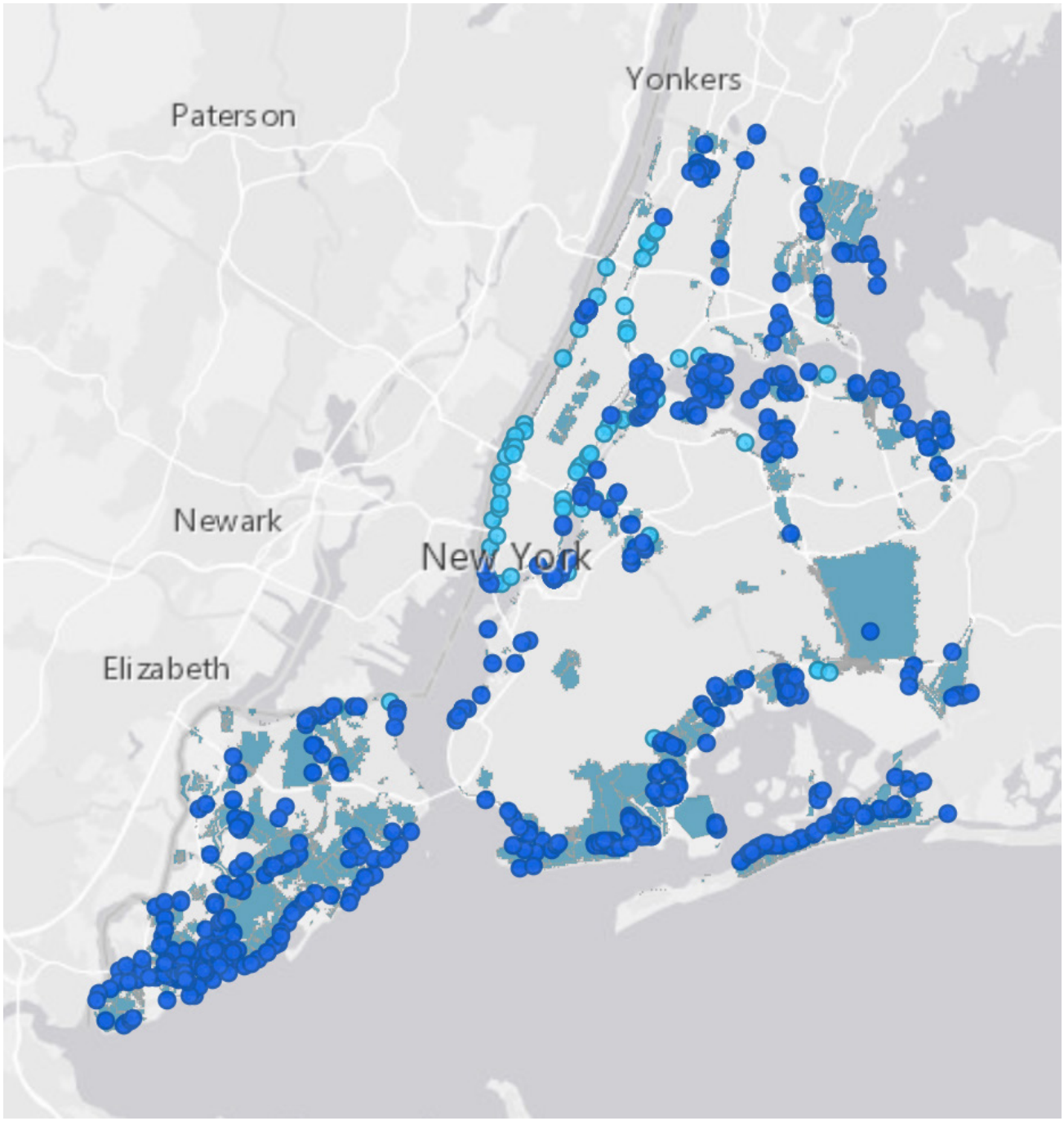
The information shown on this map is the best available information as of August 1, 2020.

MS4 Outfalls

- MS4 Outfall
- CSO with MS4 Connection

MS4 Drainage Areas

- City
- Unknown



Illicit Discharge Detection and Elimination

Illicit discharges are non-stormwater, unauthorized discharges into and from the MS4. Examples include sanitary pipes illegally connected to storm sewers and substances like oils dumped into catch basins. The City has longstanding, effective programs for detecting, identifying, and eliminating illicit discharges citywide. These include the Shoreline Survey, Sentinel Monitoring Program, Harbor Survey Program, and Emergency Response Units. City agencies also detect and abate illicit discharges discovered and confirmed to be originating from their properties.

The City has PEO programs for the public, businesses, and City employees on the hazards of improper disposal of materials and actions to take to reduce the risk of an illicit discharge. City employees working off-site and the public are encouraged to call 311 if they see a potential illicit discharge.

Typically, once the City identifies a potential illicit discharge, it initiates a trackdown to find the source and then takes steps to abate the discharge, if confirmed to be illicit. The trackdown process may include a series of complex steps both in the office and in the field. Each trackdown investigation is unique; some can take a few hours, while others can take days or months depending on the location, the number of sources, the logistics and the complexity of the drainage area.

2022 Program Assessment

During this reporting period, the City continued to implement its citywide IDDE Program: characterizing outfalls, sampling receiving waterbodies, source tracking, and eliminating illicit discharges. The City detected illicit discharges and eliminated them citywide through the DEP Response and Compliance Units; Sentinel Monitoring and Shoreline Survey programs; and agency actions at their municipal facilities in the MS4 area. The City is working to investigate the illicit discharges that are within the City's jurisdiction that were detected in 2022 but not eliminated within the calendar year. Some illicit discharges reported as detected will not have an accompanying abatement record because of circumstances such as an investigation's resulting in the determination that the discharge was not illicit or that the matter should be turned over to NYSDEC.

Non-stormwater discharges (e.g., water line flushing potable water, AC unit condensate, water from crawl spaces, dechlorinated swimming pool discharges) into the MS4 are generally considered illicit. However, some non-stormwater discharges are allowed, including those from firefighting activities and discharges determined by DEP not to be significant contributors of pollutants. DEP makes the determination on a case-by-case basis. To obtain DEP approval to discharge non-stormwater into the MS4, email DEP at MS4@dep.nyc.gov with the subject line Non-stormwater Discharge Inquiry.

Under the Shoreline Survey Program, DEP conducts an outfall reconnaissance inventory (ORI), surveying 100 percent of shoreline outfalls every 10 years.[4] MS4 outfalls are not evenly distributed throughout the shoreline; therefore, the percentage of outfalls DEP inventories each year depends on the area of shoreline inventoried.[5] In 2022, DEP inventoried approximately 43% of MS4 outfalls included in the Shoreline Survey and sent to NYSDEC an updated list of the DEP-owned CSO and MS4 outfalls.

Established as an enhancement to the Shoreline Survey, the DEP Sentinel Monitoring Program entails the regular monitoring and sampling of waterbodies throughout NYC. The purpose of the program is to detect continuous, intermittent, and/or transitory illicit discharges. Using a set list of Global Positioning System (GPS) coordinates, DEP goes to sentinel stations quarterly, collects water for samples, and analyzes the samples for pathogens. DEP may also use Harbor Survey data for this effort. The results of the mini-shoreline investigations and sampling are included in the Integrated Sentinel Monitoring Reports.

4 As required of the shoreline in the 14 WRRF SPDES permits, DEP conducts the Shoreline Survey Program by surveying 50 percent of the shoreline every five years so that 100 percent of shoreline is completed every 10 years, as required by the MS4 permit. DEP may also re-visit target drainage areas due to anticipated or identified changes to outfalls.

5 The most recent Shoreline Survey report covered the 2018-2022 period (report submitted March 2023). The 2013-2022 period represented the ten-year period during which 100% of MS4 outfalls were surveyed in compliance with the MS4 permit.

Program Highlights

Elimination of Illicit Discharge to Outfall TI-008. TI-008 is an outfall discharging to Alley Creek that receives over 2 MGD of flow from Oakland Lake via a connection downstream of the regulator. Water samples for bacteria were consistently low in Oakland Lake, but higher than expected at the mouth of outfall TI-008. Through sampling, CCTV investigations, and interior investigations by walking the sewer lines, DEP discovered the bacteria source from a parallel sanitary line infiltrating downstream of the regulator. In 2021, DEP completed the repair of the sanitary sewer adjacent to TI-008 and eliminated one infiltration of sanitary sewer to the storm sewer tributary to TI-008. Subsequent sampling at TI-008 indicated other possible infiltrations to the storm sewer. DEP will continue to investigate in 2023.

Microbial Source Tracking Study. In 2020, DEP partnered with the US Geological Survey (USGS) on a microbial source tracking (MST) study to identify the source(s) and relative host contributions of bacterial contamination in Alley Creek. The object of the study was to analyze water samples for markers using the quantitative polymerase chain reaction (qPCR) method to characterize the various sources of fecal contamination (humans, waterfowl, and canines) in addition to microbiological and chemical constituents associated with human sewage. In 2021, DEP and the USGS completed sample collection for the study and conducted intensive sampling at the outfall TI-024[6] to investigate the area for illicit discharges.

Results indicated that human MST markers were detected in 27 of the 28 samples collected at the three outfall sites along Alley Creek during dry- and wet-weather conditions and regardless of tidal conditions; canine Bacteroides and waterfowl-associated Helicobacter markers were less prevalent.

Because neither Oakland Lake nor groundwater was identified by this study as a significant source of fecal indicator bacteria (FIB) to Alley Creek, it was determined that they could not be the source of the high concentration of human MST markers. However, sampling during low tide, revealed influence of a damaged sanitary sewer line parallel to the combined sewer connecting to Oakland Lake; this condition resulted in elevated FIB concentrations and human and canine MST markers. Repairs to the sewer line that were completed toward the end of the study resulted in a substantial decrease in FIB and MST marker concentrations.

The USGS published the final report in July 2022.[7] DEP continues to assess the area by taking samples, walking the sewer, and eliminating any illegal discharge, if found.

Table 4 lists measurable goals and measures with the status of the City's implementation of IDDE BMPs and represents citywide metrics.

Goals for 2023

The City will continue its IDDE program, including the Shoreline Survey, Harbor Survey, Sentinel Monitoring, Emergency Response Units, and responding to issues discovered on-site at municipally owned facilities. DEP will continue assessing the areas around outfalls TI-008 and TI-684 (formerly designated as TI-024) in Alley Creek.

6 TI-024 to has been redesignated as TI-684.

7 Assessment of Fecal Contamination Sources to Alley Creek, Queens County, New York, August 2020–June 2021 https://pubs.er.usgs.gov/publication/sir20225068

DEP conducts dye test to track down illicit discharge

Table 4. IDDE Program 2022 Status of Implementation

BMP	Measurable Goals	Measures	Status
Detect and eliminate illicit discharges	Detect and eliminate illicit discharges including illegal dumping	Number of illicit discharges detected	1053*
		Number of illicit discharges abated	1047*
		Number of and type of enforcement actions and penalties issued	DEP issued 82 summonses, $45,080 in penalties and 296 Commissioner's Orders; DSNY issued 2,525 summonses†
	Conduct an outfall reconnaissance inventory with 100% completed every 10 years	Updated outfall spreadsheet submitted to NYSDEC	Appendix 2 – SPDES outfall listing‡
		Percent of MS4 outfalls for which an outfall reconnaissance inventory (ORI) has been performed	43%
Prepare reports	Prepare a Special Report for waterbodies with fecal coliform above 200 colonies/100 ml and for unauthorized non-stormwater discharges within 3 years of August 1, 2015 and annually thereafter..	Status and location of Integrated Sentinel Monitoring Report submitted to NYSDEC	Available on the DEP website under the header Sentinel Monitoring Program: https://www1.nyc.gov/site/dep/water/harbor-water-quality.page
Provide an ongoing public education and awareness program	Implement a public education program on potential hazards of illicit discharges	List of education activities for public employees	PP/GH agency staff training
		List of education & outreach programs/ events and relevant metric(s) for each (e.g., number of participants, events, or materials distributed)	• Automotive Association Outreach (1 event; 5 businesses contacted) • Community Clean-ups (360 events) • DEP Environmental Education (61 events; 6,252 participants; 15,000 materials distributed) • Parks Environmental Education (6 events; 4,350 participants) • Forgot Your Bag? (231 canine waste dispensers in the MS4 area) • Harbor Protectors (2 events, 160 participants) • Park Stewardship (347 events; 4,296 participants) • SAFE Disposal Events (10 events; 20,678 participants: 4,378,751 materials distributed) • "Trash it, Don't Flush It" Outreach (7,888 households contacted) • Urban Park Rangers Natural Classroom (547 events; 12,133 participants) • Visitor Center at Newtown Creek (160 events; 4,227 participants)
		List of planned educational and outreach programs/activities to be undertaken in the next reporting cycle	• Automotive Associations Outreach • Community Clean-ups • DEP Environmental Education • Forgot Your Bag? • Park Stewardship • SAFE Disposal Events • "Trash It, Don't Flush It" Outreach • Urban Park Rangers Natural Classroom • Visitor Center at Newtown Creek
Provide training for staff	Implement a staff training program on IDDE	Number of staff training opportunities/events	9 events
		Number of DEP staff trained on IDDE	49 participants total§

* Number includes illicit discharges detected/abated by DEP citywide and illicit discharges detected/abated by City agencies on-site at municipal facilities in the PP/GH Inventory. The total number of illicit discharges detected may not be counted by the City as abated if the resolution action includes transferring a case to DEC.

† Excludes cases DEP referred to NYSDEC; DSNY summons are for vehicle spillage and the extrusion of noxious liquids.

‡ The spreadsheet is a full listing of DEP CSO and MS4 outfalls.

§ Participant total includes those who attended multiple training events.

Construction and Post-Construction

NYSDEC requires development or redevelopment projects disturbing an acre or more of soil to obtain coverage for stormwater discharges under the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-020-001) (CGP).

The City's Construction and Post-Construction (C/PC) Program complements the NYSDEC CGP program in the NYC MS4 area[8] by reviewing and approving stormwater pollution prevention plans (SWPPPs) and inspecting construction sites both for stormwater impacts and for operation of post-construction stormwater management practices (SMPs). The C/PC Program also requires developers to install adequate controls to ensure no net increase (NNI) of a pollutant of concern causing the impairment of an impaired waterbody without a total maximum daily load (TMDL). As part of the C/PC Program, DEP issues two types of stormwater permits for covered development projects: the Stormwater Construction Permit and the Stormwater Maintenance Permit.

Rules governing the C/PC Program first went into effect on June 1, 2019 and were amended in February 2022 to meet the reduced threshold identified in the Lot Size Soil Disturbance Threshold Study required by the 2015 MS4 permit. The amended rule includes reducing the area of disturbance requiring Stormwater Construction and Stormwater Maintenance Permits to 20,000 square feet of soil disturbance and adds as a trigger the creation of 5,000 square feet or more of impervious surface. The rule helps NYC reduce combined sewer overflows, decrease the amount of polluted stormwater entering waterbodies and increases capacity within city infrastructure.

2022 Program Assessment

The City reviewed 196 SWPPPs and issued 45 Stormwater Construction Permits, bringing the total of active Stormwater Construction Permits to 68. A list of active Stormwater Construction Permits is available through the Stormwater Permitting and Tracking System (SWPTS) at https://deppermits.microsoftcrmportals.com/. SWPTS is also the site for applicants to submit and track the review and approval of their SWPPPs and issuance of their permits.

The City inspected 96% of active construction sites at least once in 2022, issuing 2-stop work orders, 5-notices of non-compliance, and 13-summonses. The City issued 1-Stormwater Maintenance Permit.

Updated New York City Stormwater Manual following adoption of Unified Stormwater Rule

Of the 86 new projects received by the City, 23 met the criteria for the NNI requirement. NNI is a requirement in the Special Conditions section of the MS4 Permit (II.B.1), under which projects that discharge to waters that are impaired but do not have a TMDL allocation, must implement SMPs that negate any potential increase in pollutant loading.

The Unified Stormwater Rule (USWR), effective February 15, 2022, aligned and streamlined stormwater-related requirements throughout NYC. It expanded the C/PC program to include combined sewer system areas, lowered the soil disturbance threshold that triggers the program from one acre to 20,000 square feet, and included as an additional trigger for construction permitting the creation of 5,000 square feet of new impervious surface. For more information on the USWR, visit https://www1.nyc.gov/site/dep/water/unified-stormwater-rule.page.

Table 5 lists measurable goals and measures with the status of the City's implementation of C/PC Program BMPs.

8 The City program was extended to the combined sewer area by Local Law 91 of 2020, effective March 26, 2021.

Table 5. C/PC Program 2022 Status of Implementation

BMP	Measurable Goals	Measures	Status
Construction Site Stormwater Runoff Control	Review and Approve SWPPPs	Number of SWPPPs reviewed	196
	Inspect construction sites and enforce Stormwater Construction Permits	Number of active construction sites	68
		The percentage of active Stormwater Construction Permit sites inspected once	96%
		The percentage of active Stormwater Construction Permit sites inspected more than once	43%
		Number and type of enforcement actions and penalties issued	• Stop Work Orders: 2 issued • Notice of non-compliance: 5 issued • Summons: 13 issued • Penalties: $46,500.
		Number of construction site stormwater control trainings planned or completed	• 0 completed • 1 planned
Post-Construction Stormwater Management	Inspect post-construction sites and enforce Stormwater Maintenance Permits	Number and type of enforcement actions and penalties issued	• Stop work order: 0 • Summons: 0 • Commissioner's Order: 0 • Notice of Non-Compliance: 0 • Penalties: 0
		Number of SMP's, including type of practice and contributing impervious area	• Media Filter – 3.43 Acres • Stormwater Gallery – 1.51 Acres.
		Number and type of P-C SMPs inspected	• 1 Media Filter • 1 Stormwater Gallery
		Number and type of P-C SMPs properly maintained as determined by inspections	• 1 Media Filter • 1 Stormwater Gallery
		Number of individuals trained in inspection of long-term operation and maintenance of post-construction SMP	0
		Number of flood management projects and existing flood control devices evaluated	0

Goals for 2023

DEP's Stormwater Permitting Group plans to continue outreach efforts to the construction community, to review and approve SWPPPs, and to inspect sites that have construction permits. Additionally, City staff will continue to respond to inquiries and provide applicants with information and training, as needed or requested.

Pollution Prevention/ Good Housekeeping (PP/GH) for Municipal Operations and Facilities

The City has an extensive network of municipal facilities and operations that serve New Yorkers and keep vital infrastructure functioning properly. To help reduce the potential for these facilities and operations to pollute stormwater, the City implements a comprehensive PP/GH Program, which

- maintains an inventory of municipal facilities and operations, prioritizes them for their potential to contribute pollution to stormwater runoff and assesses them on 2, 5 and 7-year cycles for high, medium and low priority, respectively;
- provides guidance on stormwater control measures (SCMs) to reduce stormwater pollution from municipal facilities and operations;
- evaluates runoff reduction techniques including green infrastructure (GI) in planned municipal upgrades (PMUs); and
- trains City staff on PP/GH practices.

The City also updates the facility inventory and priority ratings, as they are not static and can change from year to year based on new information.

2022 Program Assessment

Inventory

The facility inventory is dynamic in nature: facilities can be consolidated or separated, newly occupied or vacated, or confirmed served by the MS4 or combined sewers. The City updates the inventory annually. At the end of 2022, there were 532 facilities in the inventory: 37 high priority, 266 medium priority, and 229 low priority.

Facility and Off-site Assessments

Facility assessments evaluate stormwater controls associated with a facility's operations and assess stormwater pollution potential. Based on pollution potential, a facility may be categorized as a high, medium, or low priority site. The City assessed 65 facilities including sites owned or operated by DSNY, DOE, DCAS, Parks, NYPD, DOT, and DOC.

The City also assessed off-site operations. Off-site operations are municipal activities generally performed in the right of way (ROW), including, but not limited to, pavement cleaning, road repairs, and catch basin cleaning. The off-site operations are assessed against the potential risk of impacts to stormwater runoff due to activities associated specifically with the operations. Typically, this assessment includes evaluation of waste-generating activities and their management, as well as stormwater controls. In 2022, the City completed and reported on the assessment of the "Citywide Spill Response in Public Right of Way" and DOHMH Pest Control and Vector Control Operations.

DEP catch basin cleaning

DSNY salt spreader in the snow

NYPD and Parks care for trees

Facility and off-site assessments continued with assessors observing safety protocols such as wearing masks and maintaining social distancing.

Stormwater Control Practices

City agencies continued to implement stormwater control practices such as cleaning catch basins, sweeping pavement and practicing proper storage of materials. Because of COVID-19, however, DSNY reduced some street sweeping activities in residential areas until July 2022.

Agencies also continued to look for ways to implement stormwater control practices:

- NYPD partnered with NYC Parks and the City Clean Up Corps to spread mulch at two NYPD facilities in the MS4 area. Spreading mulch helps increase water retention and soil health, which helps support healthy trees. NYPD also marked its catch basins and drains in high traffic areas with “No Dumping” tags, contracted cleaning crews to use water recovery systems when cleaning parking lots and conducted three sewer mapping efforts at facilities to confirm their sewer system layout.

Green Infrastructure

Agencies are required to consider, and if cost-effective, incorporate runoff reduction techniques and GI during PMUs. The City implemented GI at 6 PMU projects, all of which were green roofs constructed by Parks.

Pollution Prevention Training

The City continued to administer the PP/GH Training in both classroom (held in-person and virtually), and computer-based environments. More than 10,000 municipal employees received PP/GH training through DEP virtual, classroom-based sessions and through their agencies.

Table 6 lists measurable goals and measures with the status of the City’s implementation of PP/GH Program BMPs.

Goals for 2023

The City will continue to assess facilities and off-site operations based on their priority status; refine the facility and off-site operation inventory; and administer staff trainings.

Table 6. PP/GH Program 2022 Implementation Status

BMP	Measurable Goals	Measures	Status
Provide program for pollution prevention and good housekeeping for municipal operations and facilities	Maintain an inventory of municipal operations and facilities	Number of facilities, by priority	High – 37 Medium – 266 Low – 229
		Number of off-site operations, by priority	Med - 16 Low - 3
	Implement the PP/GH Program	Acres of parking lot swept	9,161*
		Miles of street swept	857,369*
		Number of catch basins inspected	12,351†
		Number of catch basins cleaned	6,025†
		Number of catch basins maintained	671†
		Miles of storm sewers inspected	529‡
		Miles of storm sewers cleaned	529‡
		Number of self-assessments conducted, high priority facilities	9
		Number of self-assessments conducted, medium priority	50
		Number of self-assessments conducted, low priority	7
Provide for staff training	Implement a PP/GH Training Program	Number of staff trained in-person	7,301
		Number of staff trained computer-based	4,018
Consider runoff reduction and green infrastructure	Consider runoff reduction techniques and green infrastructure in PMUs	Number of runoff reduction/green infrastructure opportunities implemented	6

* Based on citywide numbers for ROW, arterial highways, bridge roadways, tunnels, and underpasses, and work done by agencies at their facilities listed in the inventory.
† Data include the DEP ROW catch basin program based on the 2020 MS4 map and work done by agencies at their facilities listed in the inventory.
‡ Based on work done by DEP for all sewers citywide and work done by agencies at their facilities listed in the inventory.

Industrial and Commercial Stormwater Sources

NYSDEC requires certain industrial facilities to obtain coverage for stormwater discharges under the State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit for Stormwater Discharge from Industrial Activities (GP-0-17-004) (MSGP). While NYSDEC issues the MSGP, DEP is responsible for the associated inspections and enforcement of the MSGP at privately owned MSGP-covered facilities in the MS4 area. DEP also assesses unpermitted industrial and commercial facilities in the MS4 area and sends its observations to NYSDEC to facilitate NYSDEC's determination of the facilities' potential need for SPDES permit coverage. DEP maintains a list of these permitted and unpermitted facilities, referred to as the I/C Facility Inventory.

DEP and Stantec assess an unpermitted recycling facility for MSGP applicability

2022 Program Assessment

Unpermitted Facility Assessments

DEP continued assessing for SPDES applicability the remaining unpermitted facilities from its original inventory and added to its inventory newly identified unpermitted facilities. Altogether, DEP assessed 36 unpermitted facilities for SPDES permit applicability. Of those 36 facilities, DEP identified 15 for referral to NYSDEC for potential MSGP no-exposure, full MSGP or other SPDES permitting. The remaining 21 facilities did not meet the criteria for referral and have been classified as "no further action."

DEP also identified an additional 7 facilities that were inactive (i.e., out of business), classified them as "no further action" and removed them from the inventory. DEP determined that an additional 286 facilities were located outside of the MS4 area, classified them as "no further action" and removed them from the inventory.

Since the start of the I/C Program, DEP has assessed 1098 unpermitted facilities. In 2022 DEP assessed 43 unpermitted sites and 66 sites from the total inventory remain to be inspected.

Table 7 summarizes the results of unpermitted assessments performed during this reporting period.

Permitted Facility Inspections

The City inspected 10 MSGP-permitted facilities. Table 8 summarizes the MSGP-permitted site inspections completed during this reporting period. Findings from these inspections will be memorialized in inspection reports and associated enforcement (corrective action letters) to be completed after the reporting period. Inspection frequencies dictated by the MS4 permit were met during this reporting period.

Table 7. Unpermitted Assessment Summary

Assessment Results	Number of Facilities in Reporting Period (2022)	Cumulative Number of Facilities to Date (2019-2022)
Unpermitted facilities with no further action needed*	28	959
Unpermitted facilities to be referred to NYSDEC for SPDES Permit Determination†	15	139
Total	**43**	**1098**

* Includes inventory listings deemed inactive or where no industrial activity was observed; and inventory listings that did not meet criteria for SPDES permitting referral.
† Includes facilities that may be eligible for MSGP coverage, may qualify for no exposure waiver, or may need an individual SPDES permit. permitting referral.

Complaint-Driven Inspections

By calling 311, the public may make a variety of complaints related to industrial activity. DEP evaluated for I/C program applicability 34 facilities that were the subject of complaints (DEP I/C team responds only to complaints against sites active in the I/C inventory). The I/C team's inspection of one of the 34 facilities resulted in an enforcement action. The complaints against the other 33 facilities were evaluated/addressed, as appropriate, by DEP DERTA.

Enforcement

DEP issued 28 Commissioner's Orders (Cos) to facilities in the I/C inventory. A CO is an order issued by DEP to enforce its rules for the use of and discharges to the MS4; the Order explains the nature of the violation and provides a deadline for taking corrective action.

Of the 28, 9 Cos were issued to unpermitted facilities. The remaining 19 Cos were issued to permitted facilities. There were several categories of Cos issued: the majority, considered "precautionary" Cos, prohibited non-stormwater discharges to the street and sidewalk; some Cos related to IDDE investigation and elimination; one CO required a recipient to clean up the street and sidewalk of waste discharged from the site; and several Cos were related to MSGP compliance deficiencies.

DEP sent 29 formal corrective action letters to MSGP-permitted facilities. These letters directed facilities to make improvements to SWPPPs and/or housekeeping practices. 26 of the letters were linked to inspections conducted during the prior reporting period (2021). An additional 7 corrective action letters, stemming from inspections conducted in 2022, are still pending final completion and are expected to be completed in 2023.

While performing MSGP compliance inspections and unpermitted facility assessments, DEP did not observe any active, unauthorized non-stormwater discharges to the MS4. Therefore, the City issued no enforcement actions with penalties (e.g., summonses) for observed, active, illicit discharges.

Table 8 lists measurable goals and measures with the status of the City's implementation of the I/C Program BMPs.

Goals for 2023

DEP plans to continue the assessment of unpermitted facilities and inspection of permitted facilities. In addition, DEP plans to finalize SPDES assessment report referrals from the prior year and take any necessary enforcement actions stemming from assessments and inspections done in 2022.

Table 8. I/C Program 2022 Implementation Status

BMP	Measurable Goals	Measures	Status
Provide an industrial and commercial pollution control program	Implement an inspection and assessment program for unpermitted industrial and commercial sources	Status of the inspection program and stormwater controls for unpermitted industrial and commercial facilities	DEP performed 43 unpermitted facility assessments. 15 of these facilities will be referred to NYSDEC for SPDES coverage. DEP issued 9 Commissioner's Orders to unpermitted facilities.
	Implement an inspection program for MSGP Permit holders based on priority and evaluate stormwater controls	Number of SPDES MSGP facilities inspected, high priority	8
		Number of SPDES MSGP facilities inspected, medium priority	1
		Number of SPDES MSGP facilities inspected, low priority	1
		Number of non-compliant SPDES MSGP facilities	4
		Number of repeat non-compliant SPEDES MSGP facilities	6
		Number and type of enforcement actions completed and penalties issued	29 completed formal letters to permittees identifying deficiencies & associated corrective actions. A portion of these were tied to inspections completed during the prior reporting period. DEP issued 19 Commissioner's Orders to permitted facilities. 7 formal letters in progress to permittees identifying deficiencies & associated corrective actions. 2 Commissioner's Orders are in progress to permittees with repeat non-compliance.

Control of Floatable and Settleable Trash and Debris

Stormwater runoff can transport trash and debris from streets and sidewalks into local waterbodies. Once waterborne, these materials are referred to as floatables. The SWMP relies on many existing programs to control trash and debris stemming from the MS4 area. Key programs to control trash and debris and to intercept materials that could potentially discharge via storm sewer through outfalls include street sweeping, catch basin hooding and maintenance, and catch basin inspection. The City also implements booming, netting, and skimming to collect floatables in waterbodies. Public education, outreach, involvement, and participation are also important parts of the City's efforts to control floatables. A variety of programs encourage the public to help manage trash and debris, including a suite of stewardship programs (e.g., Parks Community Cleanups) and 311, which enables New Yorkers to report to the City dirty conditions they observe.

2022 Program Assessment

During this reporting period, the City implemented the floatables control programs described in the Plan. These programs included sweeping more than 857,369 miles of streets citywide, inspecting more than 12,351 catch basins and cleaning more than 6,025 catch basins. DEP maintained 23 in-water floatable containment facilities.

Some reductions in DSNY street sweeping as well as in education and outreach programs conducted by various agencies continued in 2022. DEP is working closely with DSNY to share and review street sweeping information, as an important floatables control measure.

Loading Rate Study

The City developed a study to determine the loading rate of trash and debris from the MS4 to floatable-impaired waterbodies. The City's Floatables Loading Rate Study implemented a hybrid approach that combined field measurements with statistical analysis to account for different factors affecting generation, interception, and discharge or loads of floatables in the MS4 area. When selecting catch basins to monitor, DEP considered for each catch basin factors including street litter level, street sweeping frequency, catch basin hood status, drainage area and curb length.

DEP, in coordination with other City agencies such as DOT and Parks, as appropriate, identified monitoring locations, distributed throughout Staten Island, Brooklyn, and Queens, for specific land use types including highways and parks. For a 7-month period from May to November 2021, DEP measured trash and debris discharged from 69 catch basins that were representative of City catch basins and site characteristics. Sample metrics such as surface area, total count, weight, and volume of floatables were recorded.

Measuring debris in catch basin for Loading Rate Study

Staten Island Bluebelt Cleanup

DEP began the analysis of the monitoring data in 2022. The data collected at the monitored catch basin locations are being evaluated and used to estimate total floatables loads, on an annual volume basis, from the City's MS4 area to floatables-impaired water bodies. DEP is computing the loading rates in order to investigate the relationships among the loading rates, the factors affecting loads (described above), and additional predictors or variables such as demographics and land use. These relationships will be used in a statistical analysis to predict the corresponding floatables loads at all unmonitored catch basin locations within the MS4.

Finally, these predicted floatables loading rates at each catch basin will be aggregated to quantify typical total loading rates for MS4 outfalls discharging to floatables-impaired water bodies.

Table 9 lists measurable goals and measures with the status of the City's implementation of the Control of Floatable and Settleable Trash and Debris program BMPs.

Goals for 2023

The City plans to continue its key floatables control programs, including public education and outreach, street sweeping, catch basin inspections and cleaning, and DEP's boom and netting program.

The City also plans to continue its review of the floatables loading rate information that resulted from the field measurements and statistical analysis. Floatables loading rate information will also be applied to the Urban Stormwater Quality (USWQ) modeling effort currently being piloted to assess the effectiveness of different stormwater BMPs including floatables controls (see the Monitoring section for more information on USWQ modeling).

The MS4 Permit requires the Floatables Loading Rate Study to be completed by August 1, 2025. DEP will then use information from the Floatables Loading Rate Study and USWQ models to propose, before the end of the permit term in 2027, a methodology for selecting, sizing, and siting floatables controls to reduce trash and debris that discharges to the City's waterbodies.

Table 9. Control of Floatable and Settleable Trash and Debris 2022 Status of Implementation

BMP	Measurable Goals	Measures	Status
Provide a Floatable and Settleable Trash and Debris Management Program	Determine Loading Rate of Floatable Trash and Debris discharged from MS4 to waterbodies impaired for floatables	Status of Loading Rate Study	Data analysis in progress
	Continue DEP's Catch Basin Inspection, Cleaning, and Hood Replacement Program	Number of catch basins inspected, cleaned, and retrofitted†	12,351 catch basins inspected, 6,025 catch basins cleaned, and 0‡ catch basins retrofitted
		Number of catch basin hoods repaired, installed, or replaced†	0 catch basin hoods repaired, and 509 catch basin hoods installed, or replaced
	Continue DEP's boom and netting program	Status and location of Combined Sewer Overflows Best Management Practices Annual Report with Floatables Control Program results	The most recent Combined Sewer Overflows Best Management Practices Annual Report is online and available to the public at https://www1.nyc.gov/site/dep/water/combined-sewer-overflows.page
	Implement a public education program on floatables	List of education & outreach programs/events and relevant metric(s) for each (e.g., number of participants, events, or materials distributed)	• Adopt-a-Highway (80 materials distributed) • Automotive Association Outreach (1 event; 5 businesses contacted) • Community Clean-ups (360 events) • Harbor Protectors (2 events, 160 participants) • Park Stewardship (347 events; 4,296 participants) • SAFE Disposal Events (10 events; 20,678 participants: 4,378,751 materials distributed) • "Trash it, Don't Flush It" Outreach (7,888 households contacted)

† Data include the DEP ROW catch basin program based on the MS4 map and work done by agencies at their facilities listed in the PP/GH inventory.
‡ As of 2010, DEP completed its program of retrofitting those catch basins that required such repairs before a hood could be installed.

Monitoring and Assessment of Controls

To assess the quality of stormwater runoff from the MS4, the City developed and implemented an MS4 Outfall Monitoring Program that combines data collected from existing monitoring programs with additional water quality and flow data collected in manholes upstream of select outfalls. An important goal for the MS4 Outfall Monitoring Program is to collect and analyze water quality data to determine whether a relationship exists between land use type and pollutant concentrations in the City's stormwater. The City collected water quality and flow data during wet weather events to assess the influence of land use on stormwater discharge and pollutant concentrations. The MS4 outfall sampling locations are representative of six land use types within NYC: mixed; high-density residential; low-density residential; industrial; open space; and highway. The wet weather events during which the City sampled had to meet the criteria for a "qualifying rain event:"

- no storm equal to or greater than 0.1 inch occurred in the outfall catchment area within 48 hours preceding the rain event;
- weather forecasts at least a day in advance predict rain with 80 percent probability of occurrence; and
- the event is predicted to result in at least 0.2 inches of rain.

2022 Program Assessment

NYC MS4 Outfall Monitoring Program

Sampling for the MS4 Outfall Monitoring Program began in 2019 and was completed in June 2022. The timing, variability, and unpredictability of the weather extended the sampling program from the originally anticipated 24 months to 41 months. A total of 64 samples were collected during the monitoring period. Table 10 shows the number of samples collected from each sampling location during each year of the monitoring period.

Analysis of water quality laboratory results and collected flow metering data began in July 2022. To characterize and assess the quality of stormwater discharges, the City is conducting multiple statistical tests to determine the data distribution across the sampling events for each monitored outfall location and whether there are significant differences among the outfalls.

USWQ Hydrologic and Hydraulic (H&H) Model

The City initiated a pilot to develop an USWQ model for the MS4 areas of the Tallman Island WWRF sewershed. Existing H&H models developed under the Citywide Stormwater Engineering Analysis and Planning (CSEAP) project are being used to add a water quality modeling component. These models will then be used to assess the build-up and wash-off of POCs identified in the MS4 Permit and the effectiveness of different structural and non-structural BMPs. The City expanded the H&H model network for the Tallman Island sewershed based on the 2020 MS4 Map, updated the hydrology approach within the model and performed a hydraulic recalibration of the model network.

Table 10. Number of samples collected from sampling locations

Outfall	Borough	Land Use	Total Samples 2019	Total Samples 2020	Total Samples 2021	Total Samples 2022
HP-640	Bronx	Mixed	3	3	2	1
HP-627	Bronx	Open Space	3	2	3	1
TI-604	Queens	Highway	3	2	2	2
TI-633	Queens	High-Density Residential	3	3	1	2
TI-658	Queens	Low-Density Residential	3	3	2	1
NCQ-632	Queens	Industrial	3	3	2	1
OH-607†	Brooklyn	Industrial	1	0	0	0
OB-722	Staten Island	Low-Density Residential	3	2	2	2
		Total	22	18	14	10

† Sampling at OH-607 was discontinued after only one sampling event because of a reconfiguration of the sewer system during the monitoring period.

Harbor Survey Trend Analysis

The City also initiated the development of the Harbor Survey Trends Analysis toward its goal of evaluating long-term water quality trends. The planned Harbor Survey Trends Analysis will utilize data from the Harbor Survey, which tracks a variety of metrics that generally speak to the overall condition of water quality in NYC. The City will develop an initial data analysis for the 5-year period prior to the implementation of the SWMP (i.e., 2014 to 2018) to establish baseline water quality conditions for the POCs identified in the MS4 Permit. Then, going forward, in order to track water quality trends, the analysis will be updated with subsequent Harbor Survey data and evaluated every 5 years.

Table 11 lists measurable goals and measures with the status of the City's implementation of the Monitoring Program BMPs.

Goals for 2023

DEP will continue to analyze MS4 Outfall Monitoring Program data and summarize data analysis, results, and conclusions in a comprehensive report. Stormwater concentration data from the MS4 Outfall Monitoring Program will also be used to calibrate USWQ models as model development continues throughout 2023.

The City will develop an approach for performing the initial five-year Harbor Survey Trends Analysis of water quality conditions. The City will review and evaluate Harbor Survey data, including parameters, depths and recording times, from 195 monitoring stations. The initial data analysis will be completed by August 2024, as required by the MS4 Permit.

Table 11. MS4 Monitoring Program 2022 Implementation Status

BMP	Measurable Goals	Measures	Status
Monitoring and Assessment Program	Conduct wet weather sampling from outfalls/manholes	Results of monitoring data collected and analyzed	Outfall monitoring continued through 2022 with collection of 10 water quality samples.
	Evaluate long-term trends in receiving water quality	Analyze 5 years of Harbor Survey data to establish baseline conditions prior to SWMP implementation (2014-2018)	Due 8/1/24
	Develop urban stormwater quality models	Report on progress	1st report due 8/1/24

Special Conditions for Impaired Waters

In addition to the City-administered programs and practices to reduce or remove pollutants in stormwater runoff throughout the MS4 area, there are special conditions for specific impaired waterbodies:

- Impaired waters without TMDLs
- Impaired waters with NYSDEC-approved CSO LTCPs that have identified stormwater as a significant contributor to the impairment

Information on impaired waters without TMDLs is included in the Construction and Post-Construction section of this report. Impaired waters with approved CSO LTCPs that do not predict compliance with applicable water quality standards, and where stormwater contributions from the MS4 are expected to be a significant contributor to the impairment, require the City to implement enhanced BMPs. In 2022, Coney Island Creek was the only waterbody to meet these criteria. In January 2023, DEC approved the Jamaica Bay and Tributaries LTCP. Accordingly, Thurston Basin, Bergen Basin and Fresh Creek will likewise now meet the criteria, requiring the City to determine, for those waterbodies, the priority source categories for the POCs causing the impairments; what additional or customized non-structural BMPs should be implemented and on what schedule; and any opportunities for implementing cost-effective and feasible green infrastructure projects and other structural retrofits. Future annual reports will include information on the City's progress in implementing the program in these additional waterbodies.

For Coney Island Creek, the MS4 Permit lists pathogens (fecal coliform) and floatables (garbage and refuse) as the POCs causing impairments. Table 12 shows a summary of the source categories of the POCs and the City's proposed control measures for Coney Island Creek.

Harbor Protectors stencil catch basin in Coney Island

2022 Program Assessment

The City implements enhanced SCMs in the Coney Island Creek watershed. Table 13 provides status updates on the enhanced SCMs the City included in the SWMP Plan.

Table 12. Source Categories Of POCS Proposed Control Measures For Coney Island Creek

Pollutant of Concern	Targeted MS4 Source Categories	Proposed Control Measures and Projects for CIC
Floatables	• Highly impervious area (littering)	• Catch basin marking • Source control • Public education and outreach
Pathogens	• Illicit discharges • Pet waste	• Catch basin marking • Sentinel Monitoring • Source tracking and control • Public education and outreach

Table 13. Special Conditions Program Status Updates

Program	Description	Update
Pet waste management	Maintain pet waste bag dispensers and signage as part of Parks' "Forgot Your Bag?" Program, to minimize the presence of exposed pet waste.	Parks continued to maintain the pet waste bag dispensers and signage in both Calvert Vaux and Kaiser Parks.
Catch basin marking	Include a "no dumping" message on the iron curb piece on new and replaced catch basins in the MS4 area. Provide catch basin stenciling opportunities for local organizations.	The City continued to include a "no dumping" message on newly installed catch basin curb pieces throughout the City. DEP administers a Harbor Protectors Program in Coney Island Creek, providing 4 different stencil designs and guidance to the local community.
Monitoring and Source Tracking	Explore modifications to existing sampling programs to allow the City to refine its source trackdown efforts in Coney Island Creek.	DEC approved the addition of a new Sentinel Monitoring station at Coney Island Creek (DEP began implementation of the modified program in April 2020).
Public education and outreach	Conduct education and outreach in the Coney Island Creek Community on pollution source controls.	On October 27, 2022, DEP Harbor Protectors Program participated in a "Day of Service" for the Superstorm Sandy Anniversary in Coney Island at Mermaid Ave from 17th St to 35th St, Neptune Ave from 33rd St to 35th St with more than 100 students from PS 188, PS 329, and PS 288, who cleaned and stenciled more than 60 catch basins. Harbor Protectors are DEP volunteers (students or community groups) who engage in stewardship activities in their neighborhoods. These activities help keep our communities clean and pollution out of our waterways. Volunteers participate in one or more activities that support stormwater management: • Clean Catch Basins: New York City has more than 144,000 catch basins! Catch basins collect rainwater that flows down streets and sidewalks. Harbor Protectors remove litter and leaves that can cover catch basins causing flooding and pollution in nearby waterways. • Stencil Catch Basins: Sometimes people pour oils or dump garbage down catch basins. Those oils and debris can end up as pollution in nearby waterways. Harbor Protectors stencil an educational message on the sidewalk near a catch basin to remind their neighbors not to dump anything there. • Care for Rain Gardens: Rain Gardens are built in City sidewalks and are designed to collect rainwater before it gets to the catch basins. Harbor Protectors care for rain gardens by removing litter and debris, clearing inlets and outlets, and helping City maintenance staff care for plants. In 2022, DEP also reached out to 5 automotive businesses in Coney Island on proper waste disposal and had literature translated into Spanish and Russian. On June 4, 2022, Parks attended the My Estuary Day event in Coney Island at Kaiser Park for a beach Clean-up. Parks Stewardship and the Coney Island Beautification Project hosted the event. Urban wetlands provide a variety of benefits including improved water quality and storm water retention. They also serve as critical habitat for native wildlife. 150 students were in attendance.
Green infrastructure	Identify potential GI opportunities in Coney Island Creek MS4 areas by prioritizing City-owned sites based on their potential to capture runoff.	DEP identified 4 schools suitable for SMP projects. • K095: Gravesend – subsurface retention practice • K238: Anne Sullivan – bioretention practice and subsurface retention practice • K234: W. A. Cunningham – subsurface stormwater chamber • K212 Lady Deborah Moody – synthetic turf practice with subsurface stone storage Construction is nearly complete at K238, and construction will be starting at K095 and K234 by Summer 2023. For the fourth school, K212 Lady Deborah Moody, synthetic turf practice with subsurface stone storage will be included in a separate construction contract with other synthetic turf projects.

Recordkeeping and Reporting

Each year, the City prepares an MS4 Annual Report documenting the status of compliance activities related to the MS4 Permit. The City submits the MS4 Annual Report to NYSDEC by September 30 following each reporting year. The public can also request information related to the SWMP by emailing MS4@dep.nyc.gov.

This report documents activities related to MS4 Permit compliance for the 2022 reporting period and serves as the Annual Effectiveness Assessment required by the permit. The City assesses SWMP effectiveness through its achievement of the measurable goals included in the BMP tables. In addition, the annual report includes a narrative highlighting and explaining important activities conducted during the reporting year. The City also periodically refines its measurable goals with information gained from program planning and implementation, interagency working groups, and public input. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one. Table 14 shows the 2022 recordkeeping and reporting implementation status.

Table 14. Recordkeeping and Reporting 2022 Implementation Status

BMP	Measurable Goals	Measures	Status
Provide annual reports to document compliance with the MS4 permit	Develop Annual Report due September 30 following each reporting year.	Summary of annual effectiveness assessment	• See effectiveness assessment of each program under pertinent sub-sections of this report.
		Municipal Compliance Certification submission	• Appendix 3 – Municipal Compliance certification (City to include with final draft)

Installation of New Catch Basins for Willowbrook/Westerleigh

Classon Point Park

Related Initiatives

NYC Green Infrastructure Program

Building upon the successes and lessons of earlier efforts, in 2011, the City established the NYC Green Infrastructure Program (GI Program) in areas of the City served by the combined sewer system. GI practices such as green roofs and rain gardens collect, treat, and infiltrate stormwater runoff. The goal of the GI Program is to reduce CSOs into the waterbodies of NYC by using GI technologies to manage stormwater from impervious surfaces. DEP works with partner agencies to design, construct, and maintain GI on city streets and sidewalks, and on other public property.

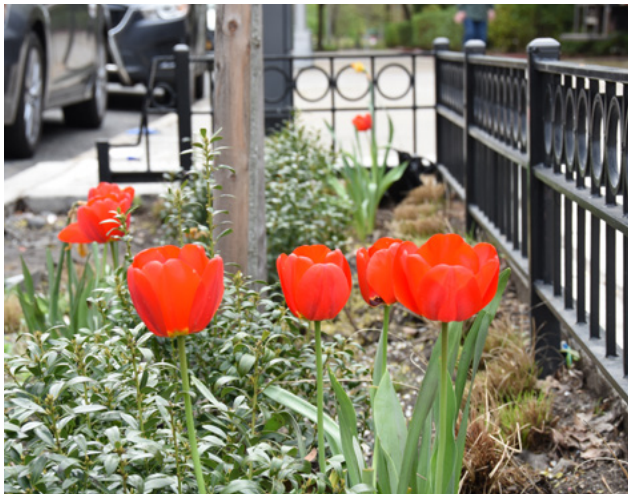
The GI Program also offers grants to private property owners to design and construct green roof retrofits citywide (including in separately sewered areas of NYC), and an incentive program that funds the design and construction of site-level green infrastructure practices on private properties.

The GI Program includes a research and development effort, which reviews GI performance over time, ensures performance-based maintenance and operations, and conducts cost-benefit analyses of various GI designs. The data analysis supports the City's water quality-related compliance programs and fills data gaps that DEP has identified through previous monitoring activities. This work is critical to the success of GI implementation in both combined and separate sewer areas of NYC.

For more information on the NYC Green Infrastructure Program, visit the DEP website https://www1.nyc.gov/site/dep/water/green-infrastructure.page

or see the 2021 GI annual report https://www.nyc.gov/assets/dep/downloads/pdf/water/stormwater/green-infrastructure/gi-annual-report-2021.pdf

NYC rain garden in bloom



Rockaway Median Project

Rockaway Median Project (Beach-67th Street Project)

The Beach 67th-Green Street Median Project (between Thursby Avenue and Almeda Avenue) was designed to minimize major street and local area flooding using the existing street median assets and incorporating Green Infrastructure elements such as bioretention and detention structures.

Some of the key construction elements of this project include:

- Rehabilitation of the existing three Street medians between Thursby and Almeda Avenues and incorporation of GI/LID elements such as bioretention and detention structures.
- Reconstruction and extension of the street median along the intersection of Beach 67th Street and Almeda Avenue.
- Pavement resurfacing along Beach 67th Street (between Thursby and Almeda Avenues).
- Pedestrian ramp improvements for ADA compliance at the intersections of Beach 67th Street and Almeda Avenue and Beach 67th Street and Thursby Avenue.
- Landscape work along Beach 67th Street (between Thursby and Almeda Avenues).

The City completed this project in 2022.

Southeast Queens and Cloudburst Pilot Projects

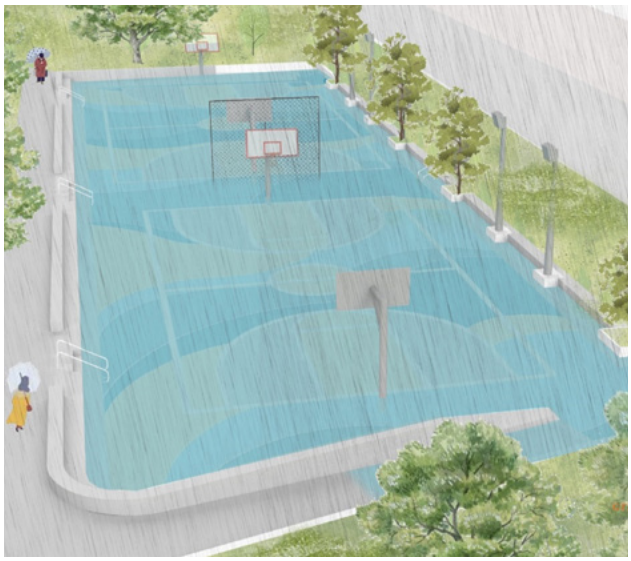
New York City has already seen flooding events caused by extreme rain and is anticipating that flooding may become worse with climate change. In Southeast Queens, flooding has been a chronic issue for more than 70 years and has been exacerbated by increasing rainfall, loss of permeable surfaces, and reduced groundwater. Over the past ten years, Queens Community Boards 12 and 13 have had more flooding complaints than any other areas of New York City. DEP's 10-Year Capital Budget allocates $1.5 billion to plan and initiate full sewer build-out and to provide short-term relief wherever possible. Full build-out requires completion over many years of approximately 450 miles of new storm sewer, and upgrades to 260 miles of sanitary sewer and 30 miles of combined sewer.

To complement storm sewer and GI work in Southeast Queens, DEP identified two pilot projects to help demonstrate the feasibility of implementing the cloudburst approach. These projects aim to supplement ongoing sewer buildouts and act as a buffer for storms that are not captured by sewers due to the size of the storm or the lack of fully built-out storm sewer infrastructure. This effort would reduce flooding in areas where grey infrastructure takes longer to implement and would alleviate chronic flooding of upstream areas.

The Cloudburst Program has already begun work in three neighborhoods: South Jamaica and St. Albans in Queens and East Harlem in Manhattan. Selection of the areas was led by DEP in partnership with the Parks, DOT, and DDC. The selection process used a framework that examined historic and future stormwater flooding hotspots, existing city projects, environmental justice areas, and social factors that may increase vulnerability to stormwater flooding.

DEP is currently in design phases for two cloudburst pilot projects in Southeast Queens. One of these projects is in St. Albans, which is prone to frequent flooding, particularly at the low-point near the intersection of 177th Street and 112th Avenue. During heavy rain events, the pumping station cannot manage street runoff outside of the Direct Tributary Drainage Area, so runoff bypasses existing catch basins (street drains), leading to additional runoff at the intersection. The cloudburst demonstration project proposed involves a combination of GI and roadway changes, including depressed gutters. In addition to helping prevent flooding, this project will also help roadway safety, making conditions safer for pedestrians and vehicles. As of September 2022, design for this project was underway.

Rendering of cloudburst infrastructure during dry weather



Rendering of cloudburst infrastructure during wet weather

A second project will be located at the South Jamaica Houses, a NYCHA campus, which includes eight city blocks in South Jamaica and is home to approximately 2,600 residents. South Jamaica Houses were chosen to provide relief upstream to allow for more flow to enter the sewer system downstream to reduce flooding. This climate resiliency project will maximize stormwater capture for up to 2.3 inches of rainfall per hour. Aside from flood mitigation, another focus of this pilot is to show how cloudburst infrastructure can go beyond just managing stormwater and offer many co-benefits by reimagining the urban fabric of communities. As of September 2022, this project reached 100% design and was proceeding to construction.

In January 2023, the NYC Mayor announced an expansion of the city's Cloudburst Program to four new sites as part of ongoing resiliency efforts to better prepare for intense rain events. Supported with nearly $400 million in capital funds, these specially designed, built, and engineered infrastructure projects will protect residents and property in Corona and Kissena Park, Queens, Parkchester, Bronx, and East New York, Brooklyn from future extreme weather brought about by climate change. These locations were selected considering physical vulnerability, social and economic factors, and below ground conditions. There will be more locations to come as funding is secured.

Definitions

Annual Report: The City publishes, by September 30 of each calendar year, a report on SWMP implementation. The report summarizes activities performed throughout the reporting period (January 1 to December 31) by all agencies with obligations under the MS4 Permit; and reports on BMPs, measurable goals and their measures, as detailed in each chapter of the Plan and in Part IV.M ofthe MS4 Permit.

Applicant: The term "applicant" means the person filing the online application for Stormwater Permitting. This person may be the owner, developer, qualified professional, or other registered user in the online application system.

Best Management Practice (BMP): Schedules, activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements (if determined necessary by DEP), operating procedures, and practices to control runoff, spillage, and leaks; sludge or waste disposal; or drainage from areas that could contribute pollutants to stormwater discharges. BMPs are referred to in EPA fact sheets and other materials. BMPs are also referred to as "activities" or "management practices" throughout the MS4 permit.

Combined Sewer Overflow (CSO): Sometimes, during heavy rain and snowstorms, a combined sewer system receives higher than normal flows. WRRFs are unable to handle flows that are greater than twice their design capacity, and, when such a flow occurs, a mix of excess stormwater and untreated wastewater discharges directly into the City's waterway at certain outfalls to prevent upstream flooding. This discharge is called a combined sewer overflow (CSO).

Combined Sewer System: A sewer system used to convey both wastewater and stormwater in a single pipe to the WRRF. During times of heavy precipitation, the combined sewer system may discharge into surface waters. See also Combined Sewer Overflow.

Covered development project: The term "covered development project" means development activity, private or public, that involves or results in an amount of soil disturbance greater than or equal to 20,000 square feet; or creation of 5,000 square feet or more of impervious surface; or is a covered maintenance activity (roadway maintenance that involves 20,000 square feet or more).[9] Such term includes development activity that is part of a larger common plan of development or sale involving or resulting in soil disturbance area greater than or equal to 20,000 square feet; or creation of 5,000 square feet or more of impervious surface. Such term includes all development activity that requires a SWPPP pursuant to the New York State Department of Environmental Conservation (NYSDEC) construction general permit.

CSO Outfall: The physical point where a municipally-owned or -operated combined sewer discharges to surface waters of the state.

CSO Regulator: A flow control structure in a combined sewer system that diverts a controlled portion of flow from the collection system to an intercepting sewer and allows the remaining flow to discharge to nearby waters as a combined sewer overflow.

Floatables: Manmade materials, such as plastics, papers, or other products which, when disposed of onto streets or into catch basins, can ultimately find their way to waterbodies and may create nuisance conditions with regard to aesthetics, recreation, navigation, and waterbody ecology.

Green Infrastructure (GI): Green infrastructure infiltrates, evapotranspires, or reuses stormwater, with significant use of soils and vegetation rather than traditional hardscape collection, conveyance, and storage structures. Common green infrastructure approaches include green roofs, trees and tree boxes, rain gardens, vegetated swales, pocket wetlands, infiltration planters, vegetated median strips, reforestation, and protection and enhancement of riparian buffers and floodplains.

Historical MS4 Map: Created prior to MS4 permit issuance in 2015, the Historical MS4 Map was unrefined and contained some inaccuracies but represented the City's best understanding of the MS4 area at that time. In developing the SWMP, the City relied upon the Historical MS4 Map to define the MS4 area. The Historical MS4 Map also served as a starting point for the process of mapping the City's MS4 drainage areas and MS4 outfalls, as required by the MS4 Permit. The Historical MS4 Map is no longer in use.

9 As of February 15, 2022, USWR lowered soil disturbance threshold from 1 acre to 20,000 square feet and added creation of 5000 or more square feet of impervious surface as triggers for Stormwater Construction permitting.

Illicit Discharge: Illicit discharge is any discharge to an MS4 that is not composed entirely of stormwater, except allowable discharges pursuant to a SPDES permit and/or to DEP rules. Examples of illicit discharges are unauthorized sanitary sewage, garage drain effluent, and waste motor oil. However, an illicit discharge could be any other unauthorized discharge, which the City or NYSDEC has determined to be a significant contributor of pollutants to the MS4.

Impaired Waters: A water is impaired if it does not meet its designated use(s), as defined by NYSDEC, generally determined by violations of state water quality standards. For purposes of this permit, "impaired" refers to waters for which Total Maximum Daily Loads (TMDLs) have been established, for which existing controls such as permits are expected to resolve the impairment, or for which a TMDL is needed. Impaired water compilations are also sometimes referred to as 303(d) lists; 303(d) lists generally include only waters for which TMDLs have not yet been developed.

Long-Term Control Plan (LTCP): An LTCP identifies appropriate CSO controls to achieve applicable water quality standards consistent with the Federal CSO Policy and Clean Water Act.

Measurable Goals: One or more statements characterizing the goals of the SWMP that reflect the needs and characteristics of the City and the areas served by its MS4. The City identified its goals, both qualitative and quantitative, using an integrated approach that addresses the requirements and intent of the provisions of the MS4 Permit.

Multi-Sector General Permit (MSGP): The Clean Water Act provides that stormwater discharges associated with industrial activity to waters of the United States (including discharges through a municipal separate storm sewer system) are unlawful, unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit. In New York, the EPA-approved State Pollutant Discharge Elimination System (SPDES) program provides that industrial facilities engaged in activities defined in 40 CFR 122.26(b) (14)(i-ix) and (xi) must obtain permit coverage for stormwater discharges to waters of the United States through the SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), unless the facilities are individually SPDES-permitted or subject to No Exposure Exclusion (that industrial activities are not exposed to stormwater).

Municipal Operations and Facilities: Any operation or facility serving a New York City governmental purpose and over which New York City has operational control.

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- Owned or operated by a state, city, town, village, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, floatables control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA, that discharges to surface waters of the state;
- Designed or used for collecting or conveying stormwater;
- Which is not a combined sewer; and
- Which is not part of a Publicly Owned Treatment Works as defined at 40 CFR 122.2

MS4 Area: The term "MS4 area" means those portions of the City of New York served by separate storm sewers and separate stormwater outfalls owned or operated by the City of New York or areas served by separate storm sewers owned or operated by the City of New York that connect to combined sewer overflow pipes downstream of the regulator owned or operated by the City of New York, and areas in which municipal operations and facilities drain by overland flow to waters of the state, as determined by DEP and described on maps of the MS4 area set forth in DEP's rules and available on DEP's website.

MS4 Outfall: Defined as any point where a municipally owned or operated separate storm sewer system discharges to either surface waters of the state or to another MS4 (an MS4 owned or operated by another regulated entity). Outfalls include discharges from pipes, ditches, swales, and other points of concentrated flow. However, areas of non- concentrated (sheet) flow which drain to surface waters of the state or to another MS4 (owned or operated by another regulated entity) are not considered outfalls.

MS4 Permit: The New York State Pollutant Discharge Elimination System (SPDES) permit, issued to the City of New York, effective date August 1, 2022, that defined the requirements to discharge stormwater from the City's MS4.

Pollutants: Dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, and agricultural waste discharged into water which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 New York Code of Rules and Regulations (NYCRR) Part 750-1.2a.

Pollutant of Concern (POC): A pollutant causing the impairment of an impaired water segment listed in Appendix 2 of MS4 Permit, including nitrogen, phosphorus, pathogens, and floatables.

Settleables: Manmade materials that may sink depending on the ambient conditions to which they are subject. Floatables include settleable materials.

Standard Operating Procedure (SOP): A set of instructions for carrying out routine operations to achieve a specific outcome.

Stormwater Construction Permit: The term "stormwater construction permit" means a permit issued by DEP which authorizes development activity on land on which there is a covered development project with an approved SWPPP.

Stormwater Controls Working Group: An interagency group formed in 2013 in accordance with the Mayor's Executive Order Number 429. This group meets quarterly or as needed to discuss all updates involving the MS4 Permit and SWMP implementation.

Total Maximum Daily Load (TMDL): A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL stipulates waste load allocations for point source discharges, load allocations for nonpoint sources, and a margin of safety.

Acronyms

ASP Alternate Side Parking

BMP Best Management Practice

CGP Construction General Permit

C/PC Construction and Post-Construction

CSO Combined Sewer Overflow

CWA Clean Water Act

GI Green Infrastructure

GIS Geographic Information System

I/C Industrial/Commercial

IDDE Illicit Discharge Detection and Elimination

LTCP Long-Term Control Plan

MS4 Municipal Separate Storm Sewer System

MSGP Multi-Sector General Permit

NNI No Net Increase

NOI Notice of Intent

NYC New York City

NYS New York State

NYSDEC New York State Department of Environmental Conservation

PMU Planned Municipal Upgrade

POC Pollutant of Concern

PP/GH Pollution Prevention/Good Housekeeping

ROW Right of Way

SAFE Solvents, Automotive, Flammables, and Electronics

SCM Stormwater Control Measure

SMP Stormwater Management Practice

SPDES State Pollutant Discharge Elimination System

SWMP Stormwater Management Program

SWPPP Stormwater Pollution Prevention Plan

SWPTS Stormwater Permitting and Tracking System

TMDL Total Maximum Daily Load

USWR Unified Stormwater Rule

WRRF Wastewater Resource Recovery Facility