

# NYC Stormwater Management Program

**NYC**  
Environmental  
Protection

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Municipal Separate Storm  
Sewer Systems of New York City

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Dragon Boat Practice in Flushing Bay

## **NYC Stormwater Management Program Plan Updates**

The New York State Department of Environmental Conservation (NYSDEC) approved, on March 14, 2019, the initial Stormwater Management Program (SWMP) Plan required by the City's 2015 State Pollutant Discharge Elimination System (SPDES) MS4 Permit. The SWMP Plan summarizes how the City complies with its MS4 Permit requirements. Pursuant to NYSDEC's issuance of the City's 2022 MS4 Permit, effective date (EDP) August 1, 2022, the City has done a comprehensive revision of this SWMP Plan.

When the City identifies any necessary programmatic changes, the City implements those changes as soon as practicable. The City then updates the SWMP Plan to reflect such revisions, detailing significant changes to the Plan in the next MS4 Annual Report, due to NYSDEC on September 30 of each year.



# Executive Summary

Municipal Separate Storm  
Sewer Systems of New York City  
SPDES Number: NY-0287890







The East River on November 10, 1914

**New York City is shaped by water.** The waters of the New York City Harbor set boundaries for the City's boroughs and define our history. Hundreds of years ago, freshwater wetlands, salt marshes, streams, and rivers supported communities, commerce, and wildlife. By the industrial age, the rivers became a means for supporting the manufacturing and maritime industries.

Wetlands and marshes were filled in and the resulting manmade tributaries became some of the nation's busiest commercial waterways. The development and rapid urbanization of NYC, as one of the world's great waterfront cities, are intrinsically linked to the waters around it.

This growth eventually adversely impacted the environment and quality of life. As New York's population grew, open trenches and early sewers conveyed increasing quantities of waste directly to the nearest waterbody. Over a century and a half of industrial pollution and sewage degraded the once-flourishing environment. These water quality and ecosystem degradations were exacerbated by the physical alterations to many waterways surrounding NYC and the legacy industrial pollution. As a result, wildlife disappeared, waterborne diseases spread, and communities of people moved away from the water's edge. New York City officials responded with investments in the first wastewater resource recovery facilities (WRRFs) at Coney Island (1886), 26th Ward (1894), and Jamaica (1903).

**New York City loves the water.** The City's early investments in sewers and wastewater treatment ushered in a century of innovation in engineering, research, monitoring, marine science, urban planning, and design and construction. The first water quality studies began in the early 1900s and, by 1909, the City had established its

Harbor Survey Program. This program helped identify the need for new infrastructure projects.

By the time the United States Congress passed the Clean Water Act in 1972, the City was on its way to reversing the effects of neglect. The Clean Water Act delegated much of the responsibility for setting water quality standards to the states, making the New York State Department of Environmental Conservation (NYSDEC) a critical partner in the City's efforts to reduce pollution and introduce a new generation of New Yorkers to the Harbor.

Since 2002, the City has completed billions of dollars in capital projects such as WRRF upgrades; sewer separation and sewer system upgrades; combined sewer overflow abatement; reduction of nitrogen in wastewater; green infrastructure installations; and marshland restoration. In recent years, the City has committed billions more to both grey and green infrastructure projects to reduce combined sewer overflows. Thanks to these investments, water quality related to municipal sewage and waste is significantly better today than it was in 1909, and the waters surrounding NYC are recovering and making a dramatic comeback. Whales are returning to the harbor, wetland and oyster restoration projects are thriving, and New Yorkers can enjoy recreational activities in their local waterways.

This NYC Stormwater Management Program Plan continues the legacy of innovation while reflecting a new era of critical thinking and planning. With this Plan, the City continues to identify sources of stormwater pollution and to implement a range of policies and programs to reduce it, all with the goal of improving and protecting the waters for the generations of New Yorkers to come.



The East River on October 29, 2022

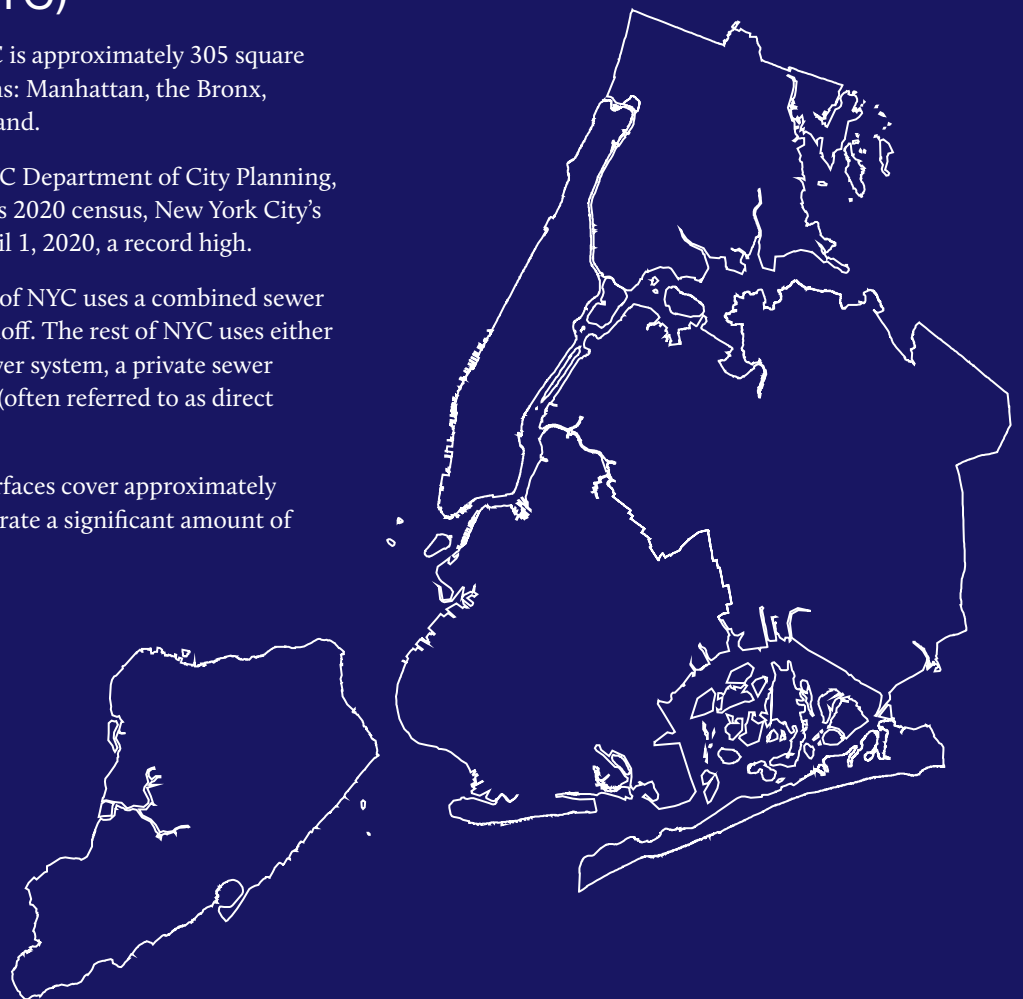
## New York City (NYC)

**Land Area.** The total area of NYC is approximately 305 square miles organized into five boroughs: Manhattan, the Bronx, Queens, Brooklyn, and Staten Island.

**Population.** According to the NYC Department of City Planning, based on the U.S. Census Bureau's 2020 census, New York City's population was 8,804,190 on April 1, 2020, a record high.

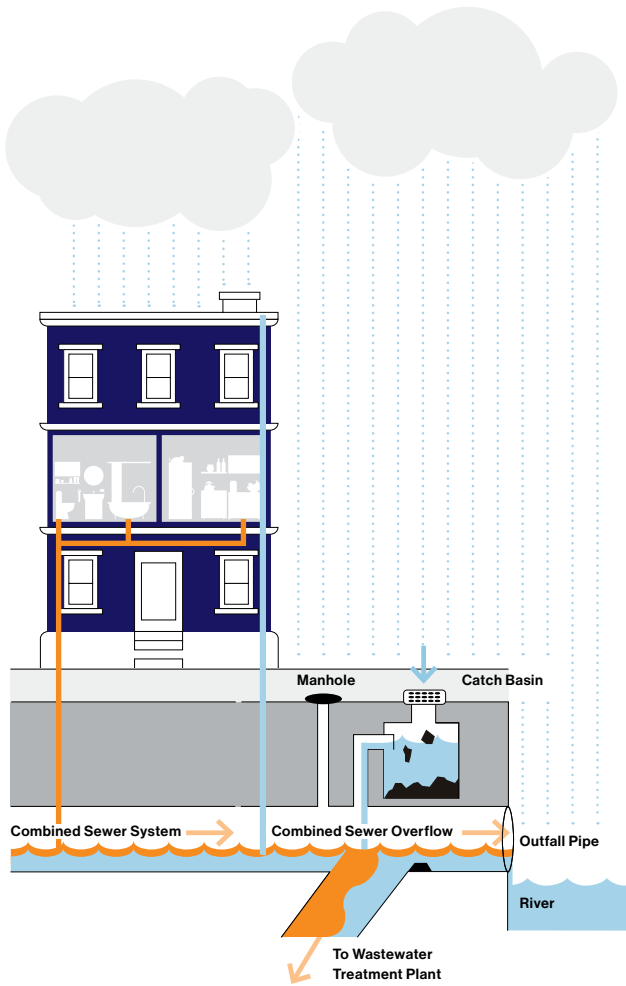
**Sewer System.** About 60 percent of NYC uses a combined sewer system to convey stormwater runoff. The rest of NYC uses either the municipal separate storm sewer system, a private sewer system, or no sewer system at all (often referred to as direct drainage or overland flow).

**Impervious Area.** Impervious surfaces cover approximately 70% of NYC's land area and generate a significant amount of stormwater runoff.

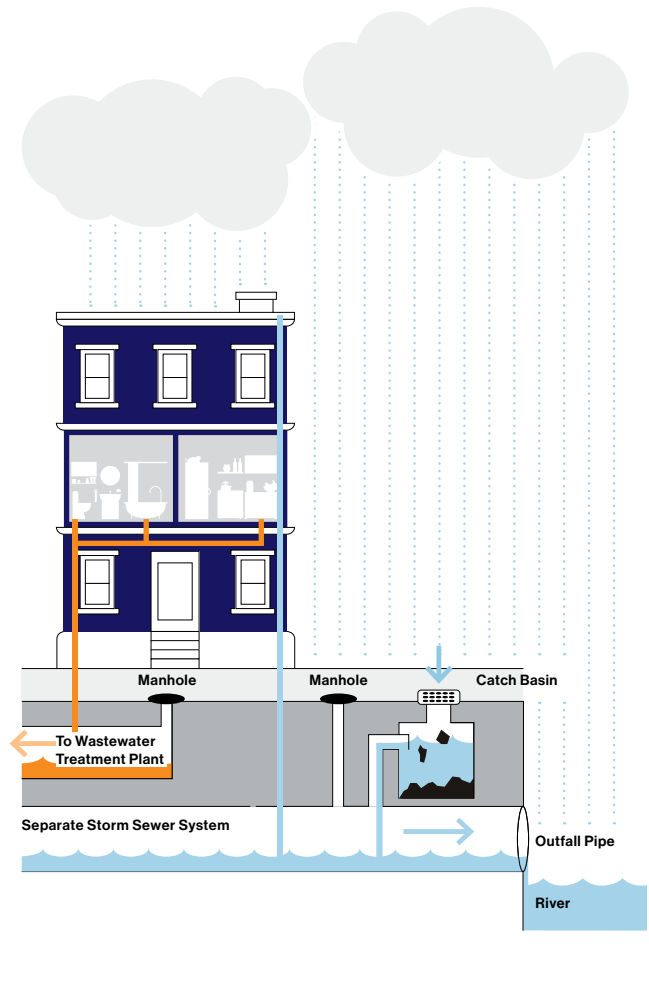




Combined Sewer System



Municipal Separate Storm Sewer System



## How do sewer systems handle stormwater?

The City has two types of sewer systems that keep stormwater from flooding streets and homes: a combined sewer system and a separate sewer system. While these systems look the same at the street level, there are some important differences.

In a Combined Sewer System, both wastewater and stormwater are carried by a single pipe to a wastewater resource recovery facility (WRRF). During times of heavy precipitation, the combined sewer system may be overwhelmed and discharge into waterbodies. This discharge is known as a combined sewer overflow (CSO).

In a Separate Storm Sewer System, wastewater and stormwater are carried by separate pipes. Wastewater is conveyed to a WRRF where it is treated, while untreated stormwater is discharged into a waterbody.

A Municipal Separate Storm Sewer System (MS4) is a separate storm sewer system that is owned by a municipality, in this case the City of New York.

# Background

When it rains and snow melts in New York City, stormwater flows over impervious surfaces such as streets, sidewalks, rooftops, and parking lots before reaching a sewer. Along the way, stormwater can come in contact with pollutants such as oils, pathogens, and sediments. In areas with a separate storm sewer system, this pollution is carried into nearby waterbodies and can be harmful to water quality, negatively impact the local ecosystem or limit recreational uses like boating.

The Clean Water Act, which Congress passed in the 1970s to help protect and restore the health of waterbodies across the country, regulates pollution from stormwater as well as other sources. To reduce stormwater pollution, beginning in the 1990s, federal and state authorities required cities with an MS4 to obtain permits to discharge stormwater into local waterbodies.

## The City of New York MS4 Permit

On August 1, 2015, the City of New York (NYC or the City) received a State Pollutant Discharge Elimination System (SPDES) Permit from NYSDEC for the City's MS4. This permit required the City to implement measures to reduce pollution in stormwater runoff. While this was the City's first comprehensive MS4 Permit, the City had been implementing stormwater management activities and projects for many years under the stormwater provisions of the SPDES Permits for its 14 WRRFs. On August 1, 2022, NYSDEC issued the City its renewed MS4 Permit.

Through its consolidated assessment and listing methodology, NYSDEC lists on its 303(d) list certain bodies of water as impaired. A waterbody is considered impaired when it fails to meet its NYSDEC-designated use (e.g., swimming, fishing, or recreational boating). In Appendix I of the 2022 MS4 Permit, NYSDEC listed impaired waters in NYC along with their relevant pollutants of concern (POCs) at the time of permit issuance on August 1, 2022. POCs are pollutants causing the impairment of an impaired water segment. The POCs that have been identified for waterbodies in NYC are:

- **Pathogens**—Pathogens (now referred to in Appendix I as fecal coliform) are disease-producing agents such as bacteria, viruses, or other microorganisms.
- **Floatables**—Floatables (now referred to in Appendix I as garbage and debris) are manmade materials such as plastics, papers, or other products, which have made their way to a waterbody.
- **Nutrients**—Nutrients, including phosphorus and nitrogen, can lead to algae blooms that deplete oxygen in the water and can kill aquatic life.

## A Municipal Separate Storm Sewer System

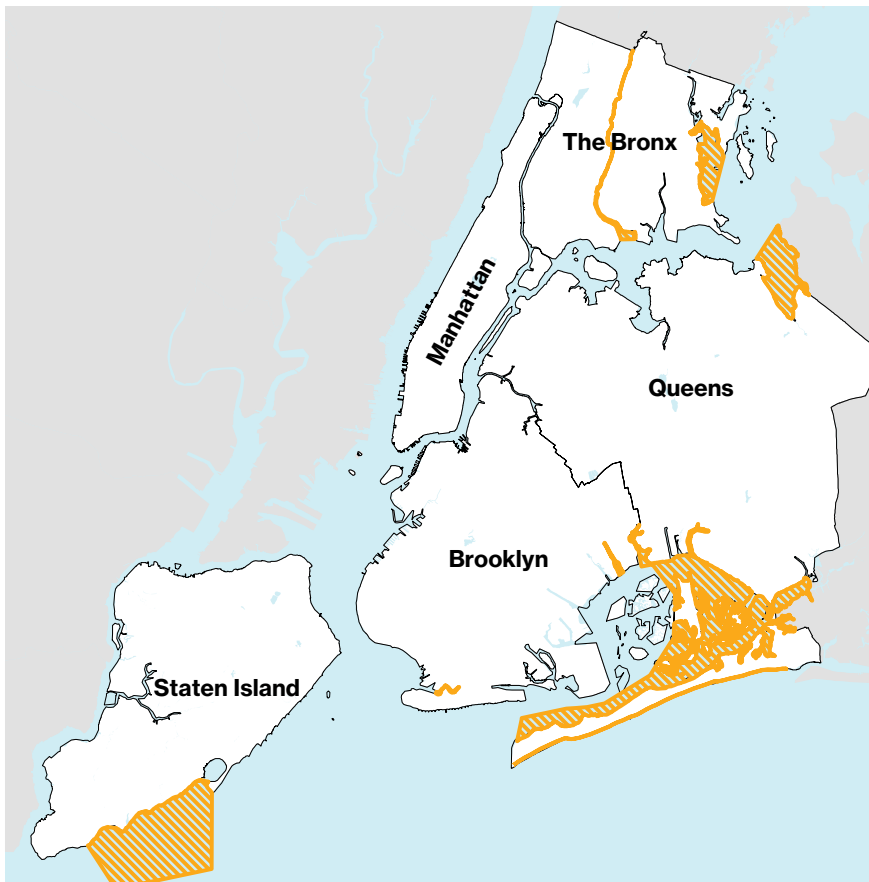
(MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that discharges to Surface Waters of the State and:


- is owned or operated by a state, city, town, village, or other public entity
- is designed or used to collect or convey stormwater;
- is not a combined sewer; and
- is not part of a publicly owned wastewater resource recovery facility.






## Waterbodies Impaired for Pathogens



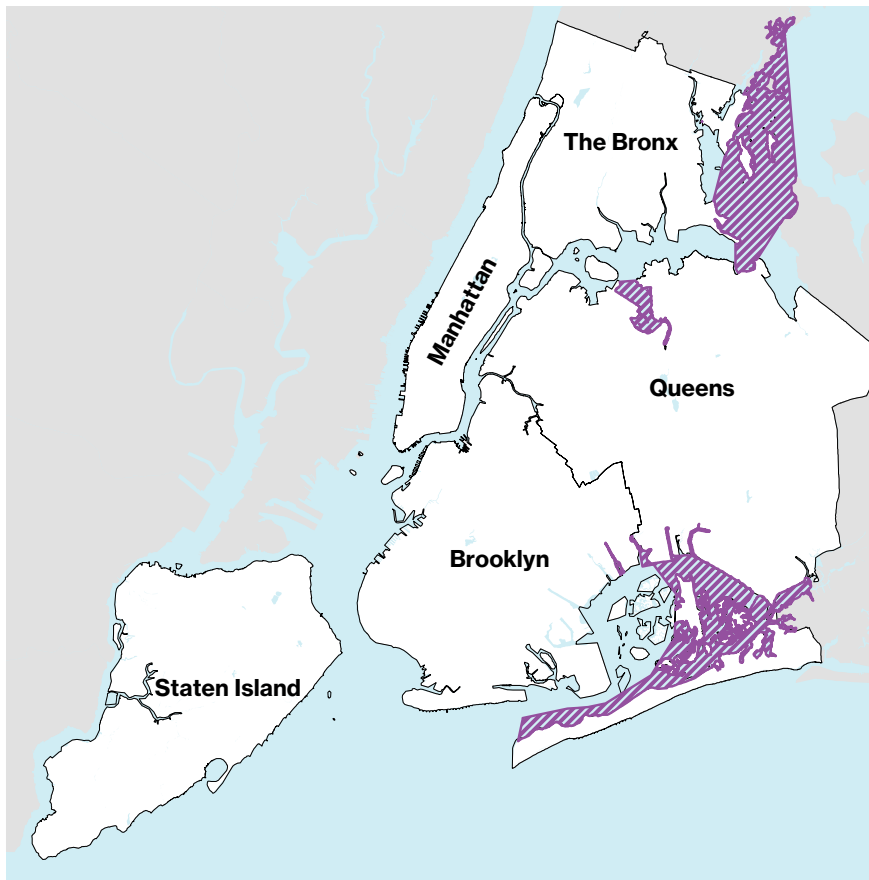
 Pathogens-Impaired Waterbodies


## Waterbodies Impaired for Floatables



 Floatables-Impaired Waterbodies


## Waterbodies Impaired for Nitrogen



 Nitrogen-Impaired Waterbodies

## Waterbodies Impaired for Phosphorus



 Phosphorus-Impaired Waterbodies

The MS4 Permit regulates drainage areas where one or more of the following statements apply:

- Stormwater drains to separate storm sewers owned or operated by the City that discharge to surface waters of the State through MS4 outfalls, or that connect to combined sewer overflow outfalls downstream of a CSO regulator (a device used in NYC’s combined sewers to control the diversion of sewage flow to the WRRFs during dry and wet weather);
- Stormwater drains to high-level storm sewers and Bluebelts that ultimately discharge to surface waters of the State through MS4 outfalls; or
- Stormwater drains by overland flow from a City operation or facility directly to surface waters of the State.

### Related Stormwater Management Efforts

New York City has long been at the forefront of innovative stormwater management, including construction of the award-winning Staten Island Bluebelts and a \$1.6 billion commitment to design and construct green infrastructure that naturally collects stormwater across the urban landscape. Ongoing programs to manage stormwater runoff include:

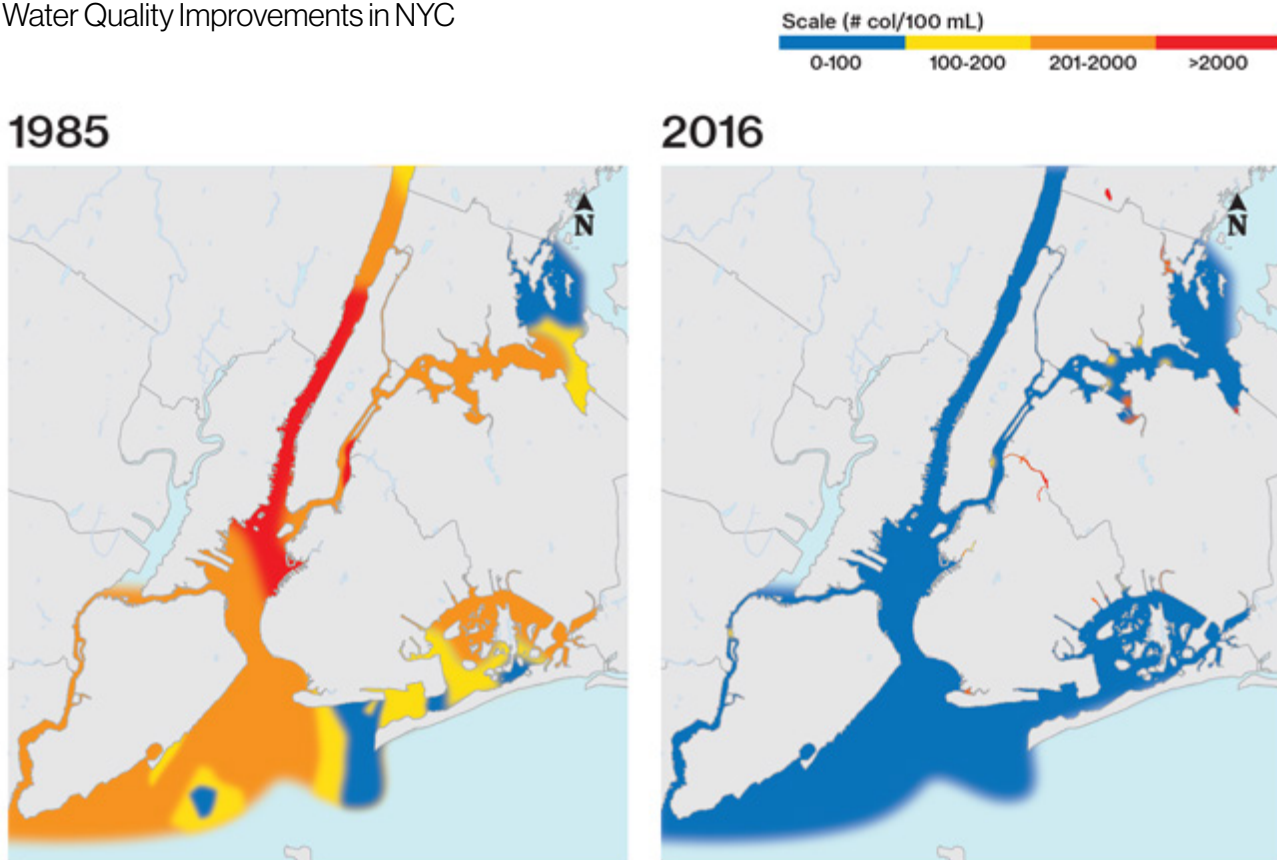
- Jamaica Bay Watershed Protection Plan
- Sustainable Stormwater Management Plan
- Bluebelt Initiatives
- NYC Green Infrastructure Program
- CSO Mitigation Program and Long-Term Control Plans

As a testament to the City’s substantial investments over the last four decades, NYC’s waterbodies are healthier than they have been in more than 100 years of testing.

### NYC MS4 Stormwater Management Program Plan

The MS4 Permit issued on August 1, 2015, required the City to develop a Stormwater Management Program (SWMP) Plan that included numerous programs designed to reduce pollution in stormwater runoff. NYSDEC approved the Plan on March 14, 2019. The City publishes an annual report on SWMP implementation that includes a section on program updates that the City is proposing as part of refining and adapting its program. The City updates the Plan text annually but implements as soon as practicable any necessary changes identified during the reporting year.

### Water Quality Improvements in NYC





The MS4 permit issued on August 1, 2022, requires continued implementation of the SWMP Plan programs as well as some significant, substantive modifications/enhancements to some of the programs, as detailed in the chapters below.

This Plan describes the ways in which the City satisfies the requirements of the MS4 Permit by managing stormwater discharges into and from the City's separate storm sewers as well as the major components of the SWMP and its associated best management practices (BMPs) to reduce the discharge of pollutants from the MS4. The programs described in this Plan satisfy the MS4 Permit requirements to meet the maximum extent practicable (MEP) standard.

Chapters of this Plan describe City programs related to MS4 Permit compliance; new initiatives or program enhancements developed for MS4 Permit compliance; and measurable goals for future assessment of each program. This Plan also refers at times to Appendices, which include documents that the MS4 Permit required or that provide additional information.

Flushing Bay



## Chapters in this Plan:

- 1 Legal Authority and Program Administration
- 2 Public Education and Outreach
- 3 Public Involvement and Participation
- 4 Mapping
- 5 Illicit Discharge Detection and Elimination
- 6 Construction and Post-Construction
- 7 Pollution Prevention/Good Housekeeping for Municipal Operations and Facilities
- 8 Industrial and Commercial Stormwater Sources
- 9 Control of Floatable and Settleable Trash and Debris
- 10 Monitoring
- 11 Special Conditions for Impaired Waters
- 12 Recordkeeping and Reporting

## Maximum Extent Practicable (MEP) Standard

Because of the unique nature of stormwater (an MS4 has limited control of its inputs and cannot treat them as a wastewater resource recovery facility can treat its influent before discharging it to a waterbody), the Clean Water Act<sup>1</sup> established the MEP standard as the appropriate compliance standard for the MS4s. The New York State Environmental Conservation Law also established the same standard.<sup>2</sup> Rather than requiring strict compliance with water quality standards through traditional end-of-pipe control techniques or numeric effluent limits, the MEP standard requires that the City implement all technically feasible and cost-effective best management practices (BMPs) that will reduce the discharge of pollutants to the MS4.

1 33 U.S.C. § 1342(p)(3)(B)(iii)

2 ECL § 17-0808(3)(c)

# 1.0 Legal Authority and Program Administration

## Administration of the SWMP

The New York City Department of Environmental Protection (DEP) led the development of the SWMP with contributions and assistance from the Stormwater Controls Working Group, a team of representatives from the following New York City agencies, a subset of which have 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 Corrections (DOC)
- Department of Education (DOE)
- Department of Health and Mental Hygiene (DOHMH)
- Department of Transportation (DOT)
- Department of Parks and Recreation (DPR or Parks)
- Department of Sanitation (DSNY)
- Fire Department (FDNY)
- Police Department (NYPD)
- Small Business Services (SBS)

Collaborators

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

Interagency collaboration is a critical component of the successful implementation of the SWMP. The MS4 Permit requires an interdisciplinary approach and diverse technical skill sets to address a broad range of water quality issues. Furthermore, strong communication among agencies enables implementation of a comprehensive set of stormwater management practices, which help protect local waterbodies.

To enhance interagency coordination, agency representatives participate in sub-teams that focus on certain program elements of the SWMP. Some sub-teams consist of only DEP staff, e.g., Industrial and Commercial; others include staff from other agencies, e.g., Public

Outreach and Education, Mapping, Pollution Prevention/ Good Housekeeping, Construction and Post-Construction, and Floatables.

The agencies that contributed to the development of the SWMP continue to work together on the implementation of its programs.

## Legal Authority

The MS4 Permit requires the City to have adequate legal authority to implement and enforce the SWMP. Initially, pursuant to the 2015 permit, the City identified three programs that required supplemental legislation and regulations (rules) to achieve the full legal authority necessary to implement the MS4 Permit: IDDE; Construction and Post-Construction; and Industrial and Commercial.

Accordingly, the City Council approved comprehensive legislation that consolidated, clarified, and supplemented the City's existing legal authority, promulgating Local Law 97 of 2017, or the NYC Stormwater Law. This law enabled the City to promulgate rules necessary to address each of the three areas identified as requiring additional authority. DEP proposed and adopted these rules in accordance with the Citywide Administrative Procedure Act (CAPA), after providing New Yorkers with the opportunity to review and comment on proposed draft(s) of the rules. All the necessary rules were effective by June 1, 2019.

Local Law 91 of 2020 (effective March 26, 2021) extended DEP's legal authority to regulate land development activities to the combined sewer area. Effective February 15, 2022, the City revised the rules for the Construction and Post-Construction program in the Unified Stormwater Rule (USWR), which reduced the soil disturbance threshold for construction permitting to 20,000 square feet and added as a trigger for coverage, creation of 5,000 square feet or more of impervious surface.

The City certified to NYSDEC, as required by the 2022 MS4 permit, that as of the effective date of the permit, August 1, 2022, the City had adequate legal authority to control pollutant discharges into and from its MS4 and to meet the requirements of the MS4 Permit.

## Enforcement Response Plan

The City developed an Enforcement Response Plan (ERP), as required by the 2015 MS4 permit. This ERP remains in effect under the 2022 MS4 Permit. The ERP establishes methods and procedures for responses to potential violations of the IDDE, Construction and Post-Construction, and Industrial and Commercial Programs. The ERP is a protocol for investigating and documenting violations of the regulatory requirements of these three programs and, where appropriate, enforcing against the violators.

Possible enforcement responses include a range of techniques to address various levels of non-compliance, such as verbal warnings, written summonses (previously referred to as “notices of violation” or “NOVs”), citations with civil and administrative penalties, criminal penalties, stop work orders, cease and desist orders, and withholding or suspension/revocation of plan approvals or permits. When issuing an enforcement response, the City considers the violator’s history, and the violation’s severity and type. For persistent non-compliance, repeat, or escalating violations, the City issues progressively stricter responses.

### Reliance on Third Parties

Third-party entities (i.e., consultants/contractors) sometimes perform work on behalf of the City. In cases in which a third-party entity works on developing or implementing any portion of the SWMP, that entity must comply with applicable MS4 Permit requirements.

Each City agency contracting with a third party is responsible for providing the third party with a copy of the MS4 Permit and confirming that the third party complies with applicable MS4 Permit requirements.

### Notification of Entities Regulated Under the MS4 Permit

Many of the ongoing or new/enhanced programs initiated as part of the SWMP affect specific stakeholders. To ensure that these stakeholders are informed of all applicable requirements, the City sends out formal notifications to the following entities of the local requirements and procedures for control of stormwater to the MS4:

- newly permitted owners or operators of industrial facilities subject to the SPDES Multi Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP)
- newly identified owners or operators of construction activities subject to the SPDES General Permit for Stormwater Discharges from Construction Activity (CGP)
  - » existing owners or operators received notification by November 1, 2022.

Jamaica Bay Wildlife Refuge, Queens





## 2.0 Public Education and Outreach

Both prior to and pursuant to its MS4 permits, the City has implemented many education and outreach initiatives that inform a broad range of stakeholders about stormwater, as well as the sources of pollutants associated with stormwater and their potential impacts on water quality. Collectively, these programs are the foundation of the City's Public Education and Outreach Program.

The target audiences for public education and outreach programs include but are not limited to students, educators, residents, business community, community groups, and environmental advocates. Key programs include the Water Resources Annual Art and Poetry Contest, NYC Parks Stewardship, Community Clean-ups, SAFE Events, Adopt-a-Highway, 311, and many more. The Public Education and Outreach Program educates New Yorkers on the proper management and disposal of used oil and grease, toxic materials, pharmaceuticals, household cleaners, pet wastes, pathogens, floatables, and nutrients.

The City uses several strategies to educate the public:

- City MS4 website, agency websites, and social media
- Information and reporting hotline
- Public signage
- Cooperative efforts with local organizations and environmental advocates
- Curriculum development and other resources for teachers
- Electronic communication
- Informational materials
- Public access to waterbodies
- Paid media
- Special programming
- Stewardship and volunteerism
- Workshops, trainings, presentations, and other events

In addition to educating New Yorkers on proper management and disposal practices, the City encourages the public to use the 311 service to report the presence of illicit discharges or water quality impacts associated with discharges into or from the MS4. 311 is accessible in many languages and through several platforms. The public can report or seek information related to catch basins, illegal dumping, dirty conditions, dry weather discharges, and other issues. See Section 2.5 for more information about 311.

### Key Measurable Goals

Key measures of the Public Education and Outreach Program include number of events, participants, and materials distributed.



NYC students participate in a DEP education program





Wolfe's Pond Bluebelt Cleanup, Staten Island

## 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](http://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 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.

## 3.0 Public Involvement and Participation

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

The City has identified key stakeholders through their demonstrated interest in the MS4 Permit, participation in other water quality programs, and/or their potential to be affected by SWMP implementation. These stakeholders fall into several categories:

- Students and educators
- General public and residents
- Environmental stakeholders
- Neighborhood associations and other community-based groups
- Governmental entities (e.g., New York City Housing Authority (NYCHA), Metropolitan Transit Authority (MTA), School Construction Authority)
- Elected officials and Community Boards
- Industrial and commercial business community
- Design, construction, and development community

The City has implemented a robust engagement strategy with support and input on the SWMP from the key stakeholders. This strategy includes:

- Identifying communication methods to reach stakeholders such as emails, press releases, mailed letters, flyers, media campaigns, website updates, and social media
- Holding stakeholder meetings to keep stakeholders informed and to solicit feedback
- Listening, acknowledging, and responding to public input
- Creating informational and educational materials
- Working with stakeholders to create public programs and events
- Providing draft documents to obtain public feedback before final submission to NYSDEC

- Leveraging other water quality related engagement efforts to reach a broader audience
- Reducing potential conflicts among stakeholders by seeking to build consensus around issues.

Throughout the initial drafting of the SWMP Plan, the City sought substantive feedback from a Stormwater Advisory Group (SAG) whose membership was open to the general public. At SAG meetings, the City provided detailed reviews of specific SWMP programs as they were developed. These focused meetings created a space for participants to engage with the latest planning and analysis the City had undertaken. The City evaluated and responded to comments and suggestions received during these meetings.

The City continues to engage the public during its implementation of the SWMP. In addition to administering the programs listed in Chapter 2: Public Education and Outreach, the City conducts outreach, accepts public input throughout any rulemaking efforts, and continues to facilitate public reporting through 311 on stormwater-related concerns. Every spring the City publishes and publicly presents a draft MS4 Annual Report for public review and comment. Additional information about the SWMP is available on the DEP website; the public is also encouraged to email [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov) for more information.

### Key Measurable Goals

Key measures reported include a summary of comments received on the draft Annual Reports and SWMP implementation, and a list of involvement and participation programs and activities.





Students participate in a tour at the Visitor Center at Newtown Creek

## 4.0 Mapping

The City has many programs to document and map important information about NYC. Much of the information gathered by these programs is available to the public through NYC Open Data at [opendata.cityofnewyork.us](https://opendata.cityofnewyork.us). As part of the SWMP, the City has mapped most MS4 outfalls and drainage areas.

DEP has developed a Sewer Network Geodatabase, which digitally captures important information about DEP's water and sewer network in a Geographic Information System (GIS). As part of an effort to reduce CSOs, DEP conducted extensive analysis and modeling of the City's combined sewer system. As a result, DEP had a good understanding of the areas draining to combined sewer outfalls.

The City used these existing DEP datasets to create the Historical MS4 Map. When the City's first MS4 Permit was issued in 2015, this map represented the City's best understanding of the MS4 area and outfalls at that time and the City used it throughout the development of the SWMP. However, the Historical MS4 Map was unrefined, contained some inaccuracies, and did not incorporate the sewer infrastructure of other City agencies.

As required by the 2015 MS4 Permit, the City submitted to NYSDEC a Preliminary MS4 Map showing the known MS4 drainage areas and outfalls as of August 1, 2018. The Preliminary MS4 map, which contained supplemental information relevant to stormwater management, was available to the public in an interactive online format.

On August 1, 2020, the City submitted an updated MS4 Map, further refining the MS4 drainage areas and outfalls. This map was the final map due under the 2015 MS4 Permit and is available to the public at [www.nyc.gov/dep.ms4map](https://www.nyc.gov/dep.ms4map). The 2022 MS4 Permit requires an updated map by August 1, 2027.

### Key Measurable Goals

Key measures reported for the MS4 Mapping Program include number of known MS4 outfalls mapped and status of the MS4 map.

## What is an MS4 outfall?

An MS4 outfall is any point where a separate storm sewer system owned or operated by the City of New York discharges either to Surface Waters of New York 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 an MS4 owned or operated by an entity other than the City are not considered MS4 outfalls.





## 5.0 Illicit Discharge Detection and Elimination (IDDE)

An illicit discharge is an unauthorized non-stormwater discharge to the storm sewer system. Examples of illicit discharges include sanitary connections to storm sewers, illegal dumping, and spills that enter the sewer. These discharges can include pollutants of concern (POCs) such as pathogens that can degrade water quality.

The City has several long-standing programs that together comprise our efforts to detect, track down, and eliminate illicit discharges:

The **Shoreline Survey Program** is an outfall reconnaissance inventory (ORI) that identifies and characterizes shoreline outfalls in NYC. Under this program, City agencies identify the attributes and locations of their outfalls, assess outfalls for evidence of dry weather discharges, and, if necessary, initiate illicit discharge field investigations, as described in Section 5.3. The ORI will address 100% of the outfalls within the MS4 area at least once every 10 years, with reasonable progress each year.

The **Sentinel Monitoring Program** monitors waterbodies throughout NYC for pathogens. Under this program, DEP collects samples quarterly at monitoring stations during dry weather. DEP compares sampling results to a NYSDEC-established water quality baseline (i.e.,

200 colonies/100mL for fecal coliform). If sampling results are above the baseline, DEP initiates a mini-shoreline investigation of the adjacent shoreline to determine whether there is a contaminated dry weather discharge that would require source trackdown and abatement actions.

The **Harbor Survey Program** samples ambient waterbody stations to assess the health of waterbodies throughout NYC. DEP coordinates the review and analysis of these data among the various monitoring programs and may use the data to initiate a mini-shoreline survey.

**311** provides a mechanism for members of the public to report to the City illicit discharges they observe. Waterway complaints, illegal dumping, and oil spills are examples of reports the public can make through 311. The City responds to 311 reports based on the type of complaint. Typically, a City employee will go to the location of a complaint, look for evidence, and try to identify the source of the discharge.

The **Emergency Spill Response Units** in DEP and FDNY respond to spills citywide. DEP responds 24 hours per day/7 days per week to spills that enter the sewer system. Throughout NYC, the FDNY Hazmat Unit and the DEP Division of Emergency Response and Technical Assessment (DERTA) respond to hazardous materials spills. DSNY may assist in spill response when requested to do so by emergency response personnel.

DEP conducts dye test to track down illicit discharge





## Illicit Discharge Trackdown and Elimination

Once a potential illicit discharge is identified on City-owned property, the responsible City agency must initiate a trackdown to find the source. When the source is found, the agency must take steps to eliminate the discharge.

When DEP identifies a potential illicit discharge on non-City-owned property, DEP undertakes the trackdown, a series of complex steps performed both in the office and in the field. DEP identifies areas that drain to the suspected outfall using sewer maps; pulls manholes in the streets to look for flow; samples discharges present in storm sewers to test for pollutants; and conducts dye tests.

If DEP finds the source of an illicit discharge, DEP issues a Commissioner's Order requiring the responsible party, which can range from a homeowner to an industrial facility, to take corrective action. DEP works with the responsible party to ensure corrective action is taken as quickly as possible. DEP also revisits the site to ensure compliance.

All City agencies must report to NYSDEC when an illicit discharge is detected and again when it is mitigated (Phase I and Phase II letters). DEP may also notify Community Boards, elected officials, and community groups when it confirms illicit discharges, and the public may be notified through the NYSDEC NY-Alert System and community leaders.

The Integrated Sentinel Monitoring Report, which DEP publishes annually on its website, includes water quality data; field investigation status and results; and an annual summary of spills and illegal dumping into the sewer system.

## IDDE Education, Outreach, and Training

The City conducts outreach to inform the general public, businesses, and City employees about illicit discharges and how to properly dispose of waste.

- *General public:* The City provides information on illicit discharges through the DEP website. DSNY SAFE disposal events and Special Waste Drop-off Sites are a resource for the public to properly dispose of waste and ensure it does not enter the MS4.
- *Industry and businesses:* The City conducts targeted outreach on illicit discharges through meetings, door-to-door visits, workshops, mailers, and on-site visits to educate the business community on proper waste disposal.
- *City employees:* The City trains operational staff on preventing and identifying illicit discharges during routine work activities through the Pollution Prevention and Good Housekeeping (PP/GH) Program. The City also trains employees implementing the IDDE Program on illicit discharge identification, proper procedures for reporting and responding, and applicable health and safety guidelines.

### Key Measurable Goals

Key measures of the IDDE Program include the number of MS4 outfalls inventoried in ORI; number of illicit discharges detected and number eliminated; number and type of enforcement actions; number of outreach programs and activities; and number of staff trained.

Governor's Island Harbor School sails with the Seaport Museum



## 6.0 Construction and Post-Construction

Construction is part of the fabric that supports the growth and change of NYC. Development of new sites and redevelopment of old sites redefine the City every day.

To reduce the impact that stormwater runoff from construction and development may have on water quality, NYSDEC administers the SPDES General Permit for Stormwater Discharges from Construction Activity (NYSDEC CGP). The MS4 Permit required the City to develop and administer an enhanced regulatory program based on the existing NYSDEC CGP program. The City developed the Construction and Post-Construction Program (C/PC Program), which was applicable in the MS4 area. Local Law 91 of 2020 extended this program to the combined sewer area, effective March 26, 2021.

### SWPPP Review and Approval

A stormwater pollution prevention plan (SWPPP) is a plan prepared by a developer to manage stormwater runoff from a construction site. SWPPPs include elements that prevent pollution both during construction and after a project is completed. The NYSDEC CGP requires developers to prepare SWPPPs; the MS4 Permit requires the City to review and approve these SWPPPs.

### Stormwater Permits

To ensure developers follow their approved SWPPPs, the City issues Stormwater Construction Permits and Stormwater Maintenance Permits. The Stormwater Construction Permit requires that the people who work on the project manage the construction site according to the SWPPP so that eroded soil and other construction wastes do not become a source of stormwater pollution. During construction, DEP may inspect a site to verify compliance with the SWPPP.

For many projects, in addition to practices that control stormwater during the construction process, the SWPPP also includes stormwater management practices (SMPs) that will be implemented to reduce the pollutants being washed from the site after construction is complete.

When construction is complete, the owner must apply for and maintain a Stormwater Maintenance Permit, which requires long-term operation and maintenance of the SMP(s) that have been constructed. DEP may periodically inspect sites to verify that SMPs are properly maintained and functioning as designed.

### Results of the Threshold Study and Unified Stormwater Rule

The 2015 MS4 Permit required the City to complete a Lot Size Soil Disturbance Threshold Study for Construction and Post-Construction Stormwater Management (Threshold Study) to determine the appropriate amount of soil disturbance that should trigger the need for review, approval, and permitting under the C/PC Program in the MS4 area. The City completed the Threshold Study in 2018 and recommended adoption of a 20,000 square foot soil disturbance threshold for both construction and post-construction requirements for public and private development and redevelopment projects on tax lots and in the right of way (ROW) within the MS4 area.

In February 2022, the City finalized rulemaking that included the reduced threshold as part of the Unified Stormwater Rule (USWR). DEP updated the definition of a covered development project to reflect the reduced threshold and added as another trigger for DEP construction permitting, the creation of 5,000 square feet of new impervious surface.

The USWR also aligned the Chapter 19.1 (Title 15 of the Rules of the City of New York) Construction/Post-Construction permitting program water quality requirements with Chapter 31 stormwater quantity and flow rate requirements, requiring covered development projects to use green infrastructure to meet requirements of both Chapters, where feasible.

### Key Measurable Goals

Key measures for the C/PC Program include number of SWPPPs reviewed; number of active construction sites; and number and type of enforcement actions.



Woodrow Bluebelt, Staten Island

## 7.0 Pollution Prevention/ Good Housekeeping 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. Most City agencies with municipal facilities and operations already had existing practices that helped prevent stormwater pollution. Building upon these existing practices, the City developed a comprehensive Pollution Prevention/Good Housekeeping (PP/GH) Program that:

- Maintains an inventory of municipal facilities and assesses these facilities and operations for the potential to contribute pollution to stormwater runoff
- Provides guidance on stormwater control measures (SCMs) to reduce stormwater pollution from municipal facilities and operations
- Trains key staff on pollution prevention and good housekeeping practices
- Considers the feasibility of incorporating runoff reduction techniques and green infrastructure in planned municipal upgrades

This program is standardized for consistency across facilities and operations, both on-site and off-site, and equips City staff with the necessary information and tools for each agency to implement the program.

### Self-Assessments of Municipal Facilities and Operations

As part of the PP/GH Program, the City assesses municipal operations and facilities in the MS4 area with the potential to contribute pollutants to stormwater runoff. The City prepared an initial inventory of 736 municipal facilities based on the Historical MS4 Map, but the inventory continues to fluctuate each year. Facilities can be consolidated or separated, newly occupied or vacated, or newly confirmed as being in the MS4 area or not. Since the inventory is dynamic in nature, the City updates the inventory each year in the MS4 Annual Report.

The City categorizes these facilities and operations using a standardized self-assessment protocol that evaluates their potential to contribute to stormwater pollution (“pollution potential”). Facilities and operations are given priority ratings of high, medium, or low, which determine the frequency of self-assessments: high priority site

assessments must be done every two years, medium every five years, and low every seven years. A facility or operation may increase or decrease in priority with each assessment based on its pollution potential at that time and is then subject to the applicable timeline for the next self-assessment based on the revised priority. The standardized self-assessment protocol aids agencies in determining sources of POCs potentially generated by their facilities and operations; evaluating the adequacy of their current PP/GH practices; and identifying management practices, policies, and procedures that may be implemented.

The City developed guidance on additional PP/GH practices, referred to as stormwater control measures (SCMs). Agencies can select appropriate actions from this suite of SCMs for implementation at their facilities and operations. SCMs include options with a range of solutions and effectiveness, which may involve both structural and non-structural controls. Structural controls include oil and water separators, grit chambers, or other devices that remove pollutants. Non-structural controls include operational practices, signage, staff education, and other procedures. The appropriate controls are subject to agency decision-making, which will consider potential effects on agency operations and individual circumstances at each facility. The list of the SCMs, which incorporated interagency and public feedback is available on DEP’s website.

### City Staff Training

The City developed PP/GH training for agency staff that addresses ways to reduce the discharge of pollutants from municipal facilities and operations. The City delivers training to agency-identified staff responsible for the implementation of SCMs in day-to-day municipal operations; agency trainers responsible for providing in-person trainings on pollution prevention; and agency site assessors responsible for conducting the self-assessments.

### Green Infrastructure for Planned Municipal Upgrades (PMUs)

Each agency considers and incorporates feasible and cost-effective runoff reduction techniques and green infrastructure (GI) during PMUs, including within municipal rights of way. Examples of GI include bioswales, green streets, grass swales, rain gardens, curb cuts to reroute flow to below-grade infiltration areas, or other low-cost improvements that provide runoff treatment or reduction.

Evaluation of site conditions to identify feasible SMPs from the hierarchy in the NYC Stormwater Manual



includes hydrogeological and environmental analyses and analyses of physical site conditions and constraints. Evaluation of cost-effectiveness includes costs of maintenance and repairs and expected life cycles of available technologies. The City has developed criteria for agencies to use during municipal upgrade planning as a consistent method for assessing feasibility of GI implementation.

### Key Measurable Goals

Key measures of the PP/GH Program include training of agency staff, completion of self-assessments, implementation of SCMs, and number of green infrastructure projects evaluated and implemented.

## 8.0 Industrial and Commercial Stormwater Sources

NYSDEC requires certain industrial facilities to obtain coverage for stormwater discharges under the SPDES MSGP. While NYSDEC continues to administer the MSGP program, DEP implements an Industrial and

Commercial (I/C) Program in the MS4 area through the following actions:

- Maintaining a facility inventory
- Assessing unpermitted facilities for contributions of POCs to impaired waters and possible referral to NYSDEC for SPDES/MSGP permitting
- Inspecting privately owned facilities with MSGP coverage and taking enforcement actions, if appropriate
- Implementing and maintaining a database tracking system
- Training inspection staff

### Industrial and Commercial Facility Inventory

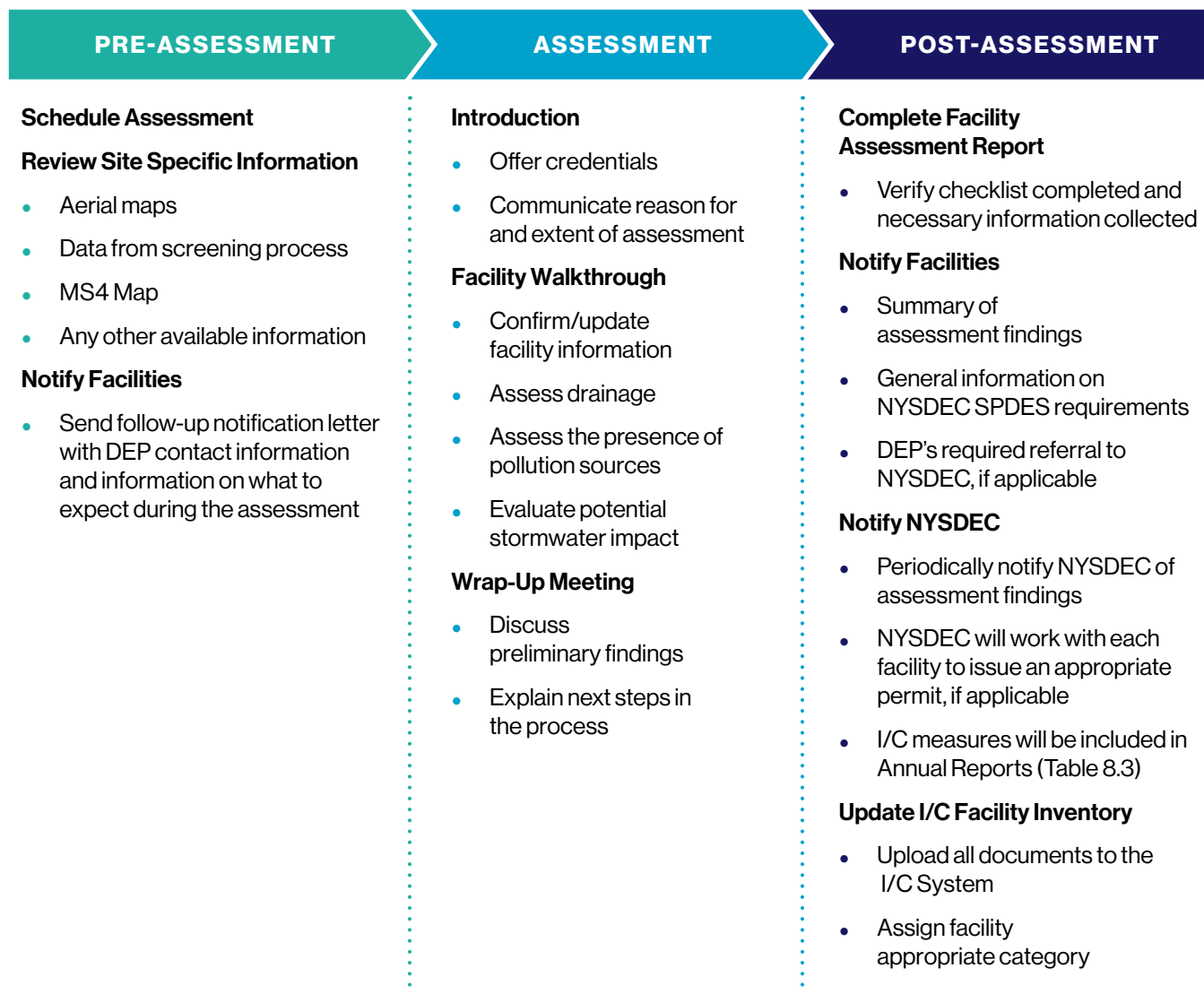
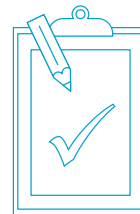
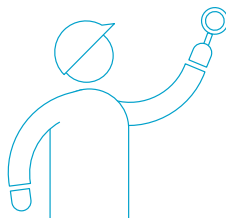
Pursuant to the 2015 MS4 Permit and using the Historical MS4 Map, various databases, and information from NYSDEC, DEP created an initial Industrial and Commercial Facility Inventory (I/C Facility Inventory). The I/C Facility Inventory includes privately owned industrial and commercial sites that may conduct activities within the industrial sectors covered by the MSGP permit, and other industrial/commercial facilities that might generate a significant amount of POCs. DEP screened the facilities in the I/C Facility Inventory and categorized the facilities for DEP action. The inventory serves as the basis for the I/C Program and must be updated annually.

#### I/C Facility Inventory Categories

| Category   | Facility Characteristics   |
|--|--|
| <b>Category 1: No Further Action</b>                                   | Not subject to MSGP: facilities that are out of business, not draining to the MS4; covered under individual SPDES permit; or filed a Notice of Termination (NOT) with NYSDEC.  |
| <b>Category 2: Facilities with NYSDEC No Exposure Certification</b>    | NYSDEC No Exposure Certification: facilities whose operations and materials are not exposed to stormwater.   |
| <b>Category 3: On-Site Assessment for Potential Referral to NYSDEC</b> | Meets the criteria set forth in Part IV.H.1.a.iii of the MS4 Permit; discharges stormwater to the MS4; not covered under an existing MSGP or individual SPDES permit; and aerial photos show evidence of industrial and commercial activity. |
| <b>Category 4: Ongoing MSGP Inspections Based on Priority Rating</b>   | Covered under NYSDEC MSGP.   |

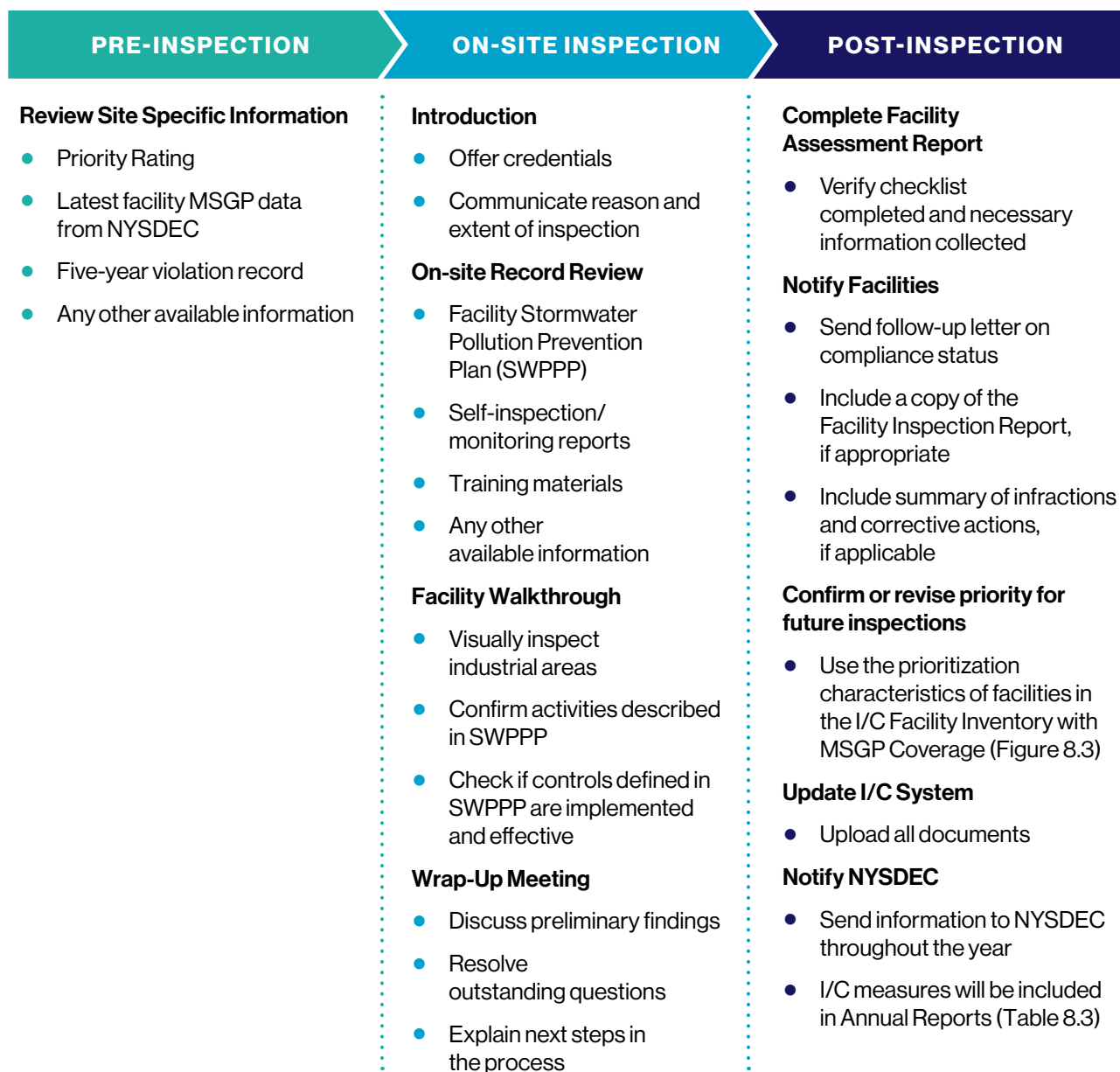
## Unpermitted Facility Assessments

DEP began facility assessments in 2019, following NYSDEC approval of the SWMP and the necessary rulemaking. DEP completed the assessments of approximately 1,300 unpermitted facilities in the original I/C Facility Inventory (Category 3) and continues to assess any newly identified facilities.



## MSGP-Permitted Facility Inspections

DEP inspects privately owned facilities with MSGP coverage in the I/C Facility Inventory (Category 4). Initially, inspections were based on information and prioritization provided by NYSDEC. At subsequent facility inspections, DEP uses findings from the prior inspection and other available information to determine potential water quality impacts and to prioritize the facility for future inspections. DEP inspects high priority facilities every year; medium priority facilities every three years; and low priority facilities every five years. As part of each inspection, DEP reviews the SWPPP and related records available onsite. If DEP determines that a facility is not in compliance with the MSGP, DEP can take enforcement action.



### Key Measurable Goals

Key measures of the I/C program include number of MSGP facilities inspected, by priority; number of unpermitted I/C facilities assessed, by priority; and number and type of enforcement actions.



## 9.0 Control of Floatable and Settleable Trash and Debris

Trash and debris from urban areas can be transported by stormwater runoff into local waterbodies. Once waterborne, this trash and debris is often referred to as “floatables.” The SWMP relies on many existing programs to control trash and debris stemming from the MS4. Key programs to manage trash and debris include street sweeping, catch basin hoods and maintenance, and booms and nets that catch materials discharged from outfalls. The City-Wide CSO Floatables Plan of 1997<sup>1</sup> reported an estimated 96% capture rate of street litter citywide through these programs and treatment of combined sewage. Additionally, City facilities and operations within the MS4 control trash and debris as part of their PP/GH practices.

The City administers a variety of public participation programs that encourage the public to help manage trash and debris. These include a suite of stewardship programs (e.g., Adopt-a-Bluebelt, Adopt-a-Highway, Adopt-a-Basket) and 311, which enable New Yorkers to report dirty conditions to the City. The City has also implemented several public awareness campaigns in connection with the SWMP:

- **B.Y.O. Campaign.** Shorthand for “bring your own,” the B.Y.O. Campaign encouraged New Yorkers to live a less disposable lifestyle by using reusable bags, mugs, and bottles. By encouraging New Yorkers to use reusable items, the campaign helped reduce the initial generation of waste that may end up as floatable debris in the City’s waterways.
- **#TalkTrashNewYork.** The City developed a basketball-themed message that reminded New Yorkers that keeping NYC clean is a team effort. DSNY partnered with DPR and the New York Knicks for #TalkTrashNewYork, an anti-litter campaign promoting clean streets, sidewalks, beaches, and parks across the City.
- **Don’t Trash Our Waters.** Seeking to raise public awareness of the connection between trash, litter, and water quality, the City developed the campaign message, “Don’t Trash Our Waters.” This campaign featured a series of charismatic underwater characters, designed to remind New Yorkers that trash on the street ends up in our harbor and hurts local wildlife such as dolphins, seals, whales, turtles, and oysters. In addition to raising awareness, the campaign also aimed to change littering behavior by imploring New Yorkers to “put it in the can.”



### Loading Rate Study

Pursuant to the 2015 MS4 permit, the City developed and NYSDEC approved a work plan to determine the loading rate of trash and debris discharged from the MS4 to waterbodies impaired by floatables. Under the 2022 MS4 permit, the City must complete the loading rate study by August 1, 2025.

The work plan combined field measurements with model analysis to determine loading rates for specific waterbodies as well as the whole MS4. The City measured trash and debris discharged from sample catch basins representing site categories that are likely to have different trash loading rates. To enhance the field measurements, the City will use an existing model to check the results of the field monitoring and to account for downstream in-water controls such as booms. These data and model results will then be used to estimate a loading rate for the whole MS4. The work plan is included as Appendix 9.1.

<sup>1</sup> HydroQual, Inc. 1997. City-Wide CSO Floatables Plan, prepared for the City of New York, Department of Environmental Protection, Bureau of Environmental Engineering, June 1997.



Measuring debris in catch basin for Loading Rate Study



Staten Island Bluebelt Cleanup

### Identifying and Selecting Additional Controls

As part of the development of the SWMP, DEP surveyed eight municipalities to identify available types of technologies used for floatables control and to assess which may be applicable in the NYC MS4 area. The City is currently implementing or has previously evaluated nearly all of the controls used by other municipalities.

After analyzing the results of the loading rate study, the City will propose, by the end of the permit term, a methodology for siting, selecting, and sizing additional controls to reduce floatables from the MS4. This method will identify and prioritize areas for additional controls and may consider factors such as waterway characteristics, neighborhood characteristics, and existing controls.

### Key Measurable Goals

Key measures of the Floatables Control Program include the number of catch basins inspected and cleaned, the number of catch basin hoods installed/replaced, and the miles of street swept. The status of the loading rate study is also reported.

## 10.0 Monitoring

To assess the quality of stormwater runoff from the MS4, the City developed an MS4 Outfall Monitoring Program that combines data collected from existing monitoring programs with additional MS4 outfall or manhole water quality and flow data. This program was designed to enable an adaptive management approach toward monitoring and assessing water quality in impaired waters.

The City's routine ambient water monitoring programs described below provided useful data for the development of the MS4 Monitoring Program. These monitoring programs will continue, and the City will use the data to complement the MS4 Outfall Monitoring Program.

- **Harbor Survey Program.** DEP and its City agency predecessors began monitoring water quality in New York Harbor waters in 1909. Today, the Harbor Survey Program assesses changes in water quality in New York Harbor over long periods to measure the effectiveness of the City's various water pollution control programs. This program routinely measures dissolved oxygen (DO), fecal coliform, enterococci, Secchi depth (transparency), chlorophyll "A," total suspended solids (TSS), and total nitrogen (TN).
- **Sentinel Monitoring Program.** DEP monitors waterbodies throughout NYC for pathogens in accordance with the SPDES permits of DEP's 14 WRRFs. Under this program, initiated in 1998, DEP collects samples quarterly at monitoring stations. DEP compares sampling results to the NYSDEC-established





DEP skimmer boat collects trash and debris

water quality baseline. If sampling results are above baseline criteria, DEP investigates the adjacent shoreline through a mini-shoreline survey to determine whether there is a contaminated dry weather discharge that would require source trackdown and abatement actions.

- **Shoreline Survey.** The Shoreline Survey Program is an outfall reconnaissance inventory (ORI) that identifies and characterizes shoreline outfalls in NYC. Under this program, City agencies identify the attributes and locations of their outfalls, assess outfalls for evidence of dry weather discharges, and, if necessary, initiate illicit discharge field investigations, as described in Section 5.3. The ORI will address 100% of the outfalls within the MS4 area at least once every 10 years, with reasonable progress each year. The City must provide an updated list of outfalls to NYSDEC annually. This dataset is maintained by DEP and is publicly available through NYC Open Data.
- **Field Sampling Analysis Program (FSAP) Sampling Program.** The FSAP was a citywide synoptic sampling program with the objective of evaluating the water quality of CSO-impacted waterbodies. This program was a temporary sampling program for DEP's CSO Long Term Control Plan (LTCP) program that targeted wet weather events and took simultaneous water quality samples at multiple locations in a short period. Each impacted waterbody was governed by a plan that addressed waterbody-specific considerations. The FSAP focused on target bacteria (i.e., fecal coliform and enterococci), TSS, biochemical oxygen demand (BOD), temperature, conductivity/salinity, and DO associated with CSO and stormwater discharges.
- **Beach Sampling.** City bathing beaches are regulated, monitored, and permitted by the City and State. Under Article 167 of the City Health Code and Section 6-2.19 of the City Sanitary Code, DOHMH is responsible for beach surveillance and monitoring for all permitted City beaches. This monitoring includes routine enterococci measurements at beaches for compliance with water quality standards. DOHMH compiles the results of routine water quality monitoring and compliance inspections in an Annual Surveillance and Monitoring Beach Report.
- **Community-led Monitoring.** Many schools, universities, citizen scientists, recreational water users, and environmental organizations conduct their own water quality testing in NYC waters. The City considers established community-led monitoring data in evaluations of long-term trends of water quality and comparisons. For example, during the development of several CSO LTCPs, organizations such as Riverkeeper, Bronx River Alliance, and the New York City Water Trail Association's Citizens Water Quality Testing Program conducted sampling and submitted data and analysis to the City. The City reviewed this information in relation to its own analyses, noted comparisons and differences, and in some cases used it for modeling calibration processes. DEP compared stakeholder data with City data and provided a summary of the comparison during public meetings, on the DEP website, and in the final CSO LTCPs that DEP submitted to NYSDEC. Organizations besides those listed above that collect long-term water quality data are encouraged to notify the MS4 team with information on their monitoring program at [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov).



## MS4 Outfall Monitoring Program

The City designed the MS4 Outfall Monitoring Program to help assess the pollutant contribution from the MS4 area and its influence on New York Harbor water quality. Through the City's MS4 Outfall Monitoring effort, which began in February 2019 and was completed in 2022, the City collected flow and water quality data at a set of MS4 outfalls during wet weather to assess the influence of land use on stormwater discharge and pollutant concentrations. In NYC, tidal flows influence most outfalls, with tidal waters sometimes reaching miles upstream. This influx of harbor water impedes stormwater discharges from outfalls and, therefore, presents challenges for measuring stormwater impacts on receiving waterbodies. In order to avoid tidal influence in the sewer, the City collected some samples from manholes upstream of the representative MS4 outfalls. The monitoring strategy and work plan focused on outfalls representative of six land use types within NYC: mixed; high-density residential; low-density residential; industrial; open space; and highway.

## 2022 MS4 Permit Monitoring Program

The next initiatives in the Monitoring Program, as required by the 2022 MS4 Permit, will be analysis of the Outfall Monitoring Program data, and to lay the groundwork for an evaluation of long-term trends in receiving water quality, an analysis of five years of Harbor Survey data to establish baseline conditions prior to SWMP implementation.

### Key Measurable Goals

To track the implementation of the MS4 Monitoring Program, the City will report on the status of that outfall monitoring and Harbor Survey data analyses.



Coney Island Creek aerial view

## 11.0 Special Conditions for Impaired Waters

The City administers the SWMP to reduce or remove pollutants in stormwater runoff from the MS4 area draining to surface waters of the State, including impaired waters. The MS4 Permit identifies special conditions for specific impaired waterbodies:

- **Impaired waters without Total Maximum Daily Loads (TMDLs)**

The City must ensure no net increase (NNI) of the POC causing the impairment from non-negligible land use changes or changes to stormwater management practices within the MS4 area draining to the impaired waters. SWMP implementation and the City's C/PC Program SWPPP review process address this requirement.

- **Impaired waters with NYSDEC-approved Combined Sewer Overflow Long Term Control Plans (CSO LTCPs)**

Impaired waters with NYSDEC-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, customized stormwater control BMPs and report on them in the Annual Report. The waterbody meeting these criteria at EDP is Coney Island Creek.

### Coney Island Creek

The two POCs causing impairments in Coney Island Creek are floatables and pathogens. The table below shows the targeted sources of these POCs in relation to the MS4 area draining to Coney Island Creek, and proposed control measures. In addition, DEP identified potential GI opportunities in Coney Island Creek MS4 areas, and has collaborated with other agencies (e.g., DPR, NYCHA, DOE) to evaluate the feasibility of adding GI pilot projects at those sites.

## Summary of POC Source Categories and Control Measures for Coney Island Creek

| Pollutant of Concern                   | Targeted MS4 Source Categories  | Proposed Control Measures and Projects for CIC  |
|--|---|---|
| <b>Floatables (garbage and refuse)</b> | <ul style="list-style-type: none"> <li>• Extensive impervious area (littering)</li> </ul>   | <ul style="list-style-type: none"> <li>• Catch basin marking and stenciling</li> <li>• Source control</li> <li>• Public education and outreach</li> </ul>   |
| <b>Pathogens (fecal coliform)</b>      | <ul style="list-style-type: none"> <li>• Illicit discharges</li> <li>• Pet waste</li> </ul> | <ul style="list-style-type: none"> <li>• Catch basin marking and stenciling</li> <li>• Pet waste management</li> <li>• Source tracking and expanded IDDE</li> <li>• Sentinel Monitoring</li> <li>• Public education and outreach</li> </ul> |

## 12.0 Recordkeeping and Reporting

Each agency maintains its own records generated from implementation of the SWMP. To consolidate information for MS4 reporting and information requests, the City developed a Consolidated Information Tracking System (CIT System or CITS). This system allows each agency to input data and supporting documentation about SWMP activities. The public can request SWMP-related records by emailing [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov).

Each year, the City publishes a draft of the MS4 Annual Report on the DEP website and presents it to the public by July 1. The draft MS4 Annual Report includes a brief description of the SWMP activities completed during the reporting year, measurable goals, and specific reporting requirements included in the MS4 Permit. The draft MS4 Annual Report also includes activities planned for the next year, and, if applicable, any proposed changes to this Plan. Once the City addresses the public comments and edits the draft report, the City submits the final Annual Report to NYSDEC and publishes it on the DEP website by September 30.

The program assessment in each section of the annual report includes a summary of the program activities during the reporting period, stated BMPs, and the status of the measurable goals for each BMP. The City reviews effectiveness of the SWMP through achievement of its measurable goals.

## Conclusion

The SWMP builds upon coordination among City agencies to leverage existing programs and implement new initiatives for stormwater management. The City created the SWMP in collaboration with stakeholders and the public, who are encouraged to continue supporting the City's efforts to implement the SWMP most effectively. As one of the world's great waterfront cities, NYC is continuing to lead the way in innovative programs to protect and improve water quality in the twenty-first century and beyond. Visit <https://www.nyc.gov/dep/ms4> for more information.

# Introduction

Municipal Separate Storm  
Sewer Systems of New York City  
SPDES Number: NY-0287890





Flushing Bay dragon boat race





Newtown Creek

The character of New York City, as one of the world's great waterfront cities, is connected to the waterbodies that surround it. The City of New York (NYC or the City) has long been at the cutting edge of innovative practices to improve water quality including upgrades at our wastewater resource recovery facilities (WRRFs), construction of the award-winning Staten Island Bluebelts, and a \$1.6 billion commitment to design and construct green infrastructure (GI) that naturally collects stormwater across our urban landscape. As a testament to the City's substantial investments over the last four decades, New York City's waterbodies are cleaner than they have been in more than a century of testing. The City remains committed to protecting the overall health of our harbor while working to improve conditions in impaired waterbodies.

In 1972, Congress passed the Clean Water Act to protect and restore the health of the waters of the United States by regulating the discharge of pollutants to waterbodies across the country. Starting in the 1990s, cities and other urbanized areas with municipal separate storm

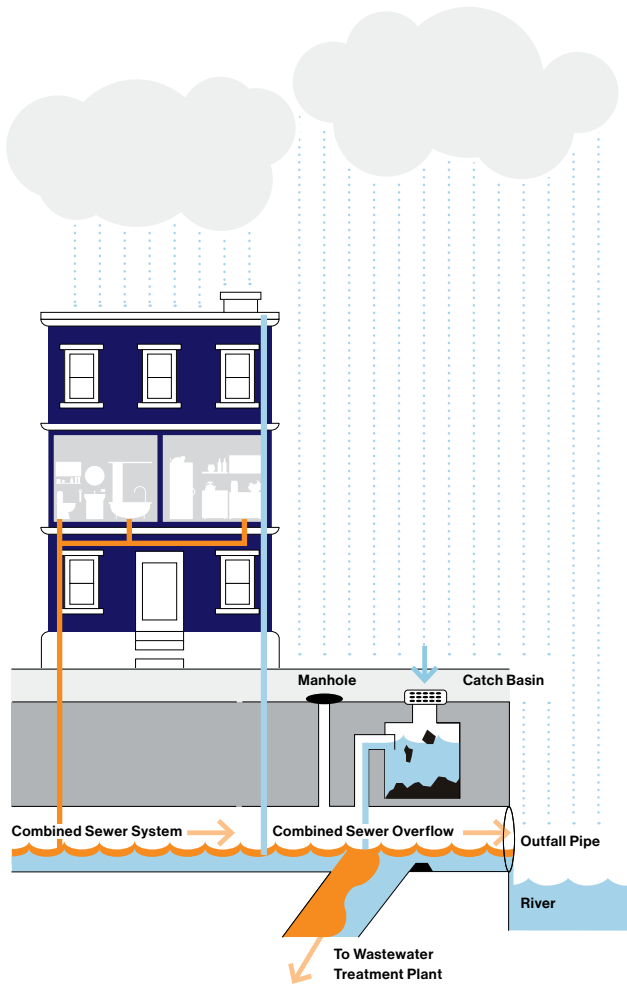
sewer systems (MS4s) were required to obtain permits for stormwater discharges, which are intended to reduce pollution from stormwater.

Separate storm sewers carry stormwater runoff directly to a local waterbody. In a dense, urban environment, stormwater runoff can absorb and convey pollutants such as trash, pathogens, oil, and grease.

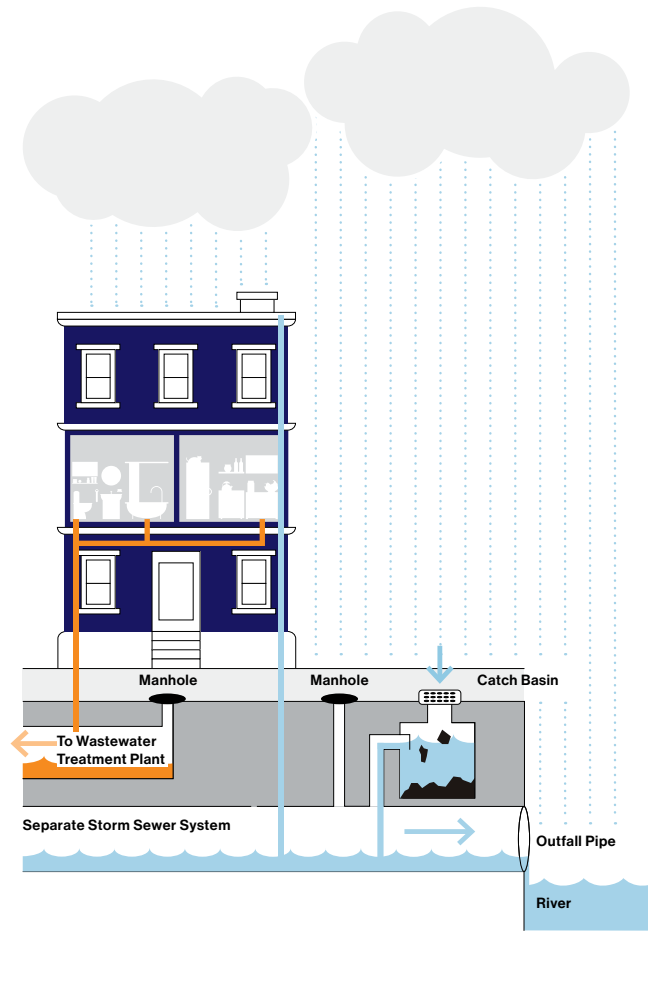
The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that discharges to surface waters of the state and:

- is owned or operated by a state, city, town, village, or other public entity;
- is designed or used to collect or convey stormwater;
- is not a combined sewer; and
- is not part of a publicly owned WRRF.

Combined Sewer System



Municipal Separate Storm Sewer System



## How do sewer systems handle stormwater?

The City has two types of sewer systems that keep stormwater from flooding streets and homes: a combined sewer system and a separate sewer system. While these systems look the same at the street level, there are some important differences.

In a **Combined Sewer System**, both wastewater and stormwater are carried by a single pipe to a wastewater resource recovery facility (WRRF). During times of heavy precipitation, the combined sewer system may be overwhelmed and discharge into waterbodies. This discharge is known as a combined sewer overflow (CSO).

In a **Separate Storm Sewer System**, wastewater and stormwater are carried by separate pipes. Wastewater is conveyed to a WRRF where it is treated, while untreated stormwater is discharged into a waterbody.

A **Municipal Separate Storm Sewer System (MS4)** is a separate storm sewer system that is owned by a municipality, in this case the City of New York.



# New York City (NYC)

**Land Area.** The total area of NYC is approximately 305 square miles organized into five boroughs: Manhattan, the Bronx, Queens, Brooklyn, and Staten Island.

**Population.** According to the NYC Department of City Planning, based on the U.S. Census Bureau's 2020 census, NYC's population was 8,804,190 on April 1, 2020, a record high population.

**Sewer System.** About 60 percent of NYC uses a combined sewer system to convey stormwater runoff. The rest of NYC uses either the municipal separate storm sewer system, a private sewer system, or no sewer system at all (often referred to as direct drainage or overland flow).

**Impervious Area.** Impervious surfaces cover approximately 70% of NYC's land area and generate a significant amount of stormwater runoff.



## The City of New York MS4 Permit

On August 1, 2015, the City received its first State Pollutant Discharge Elimination System (SPDES) MS4 Permit (No. NY-0287890) from NYSDEC. On August 1, 2022, the City's renewal permit became effective. The MS4 Permits have significantly expanded the City's previous obligations and require the City to reduce pollutants discharging to the MS4 to the maximum extent practicable (MEP) through robust requirements in the form of minimum control measures and best management practices (BMPs), and timelines for submitting key deliverables to NYSDEC.

Numerous City agencies have significant responsibilities under the MS4 Permit. The New York City Department of Environmental Protection (DEP) is responsible for coordinating the interagency efforts to meet the City's MS4 Permit requirements.

The MS4 Permit regulates drainage areas (collectively called the MS4 area) where one or more of the following statements apply:

- Stormwater drains to separate storm sewers owned or operated by the City that discharge to surface waters of the State through MS4 outfalls, or that connect to combined sewer overflow outfalls downstream of a CSO regulator (a device used in NYC's combined sewers to control the diversion of sewage flow to the WRRF during dry and wet weather);
- Stormwater drains to high-level storm sewers and Bluebelts that ultimately discharge to surface waters of the State through MS4 outfalls; or
- Stormwater drains by overland flow from a City operation or facility directly to surface waters of the State.

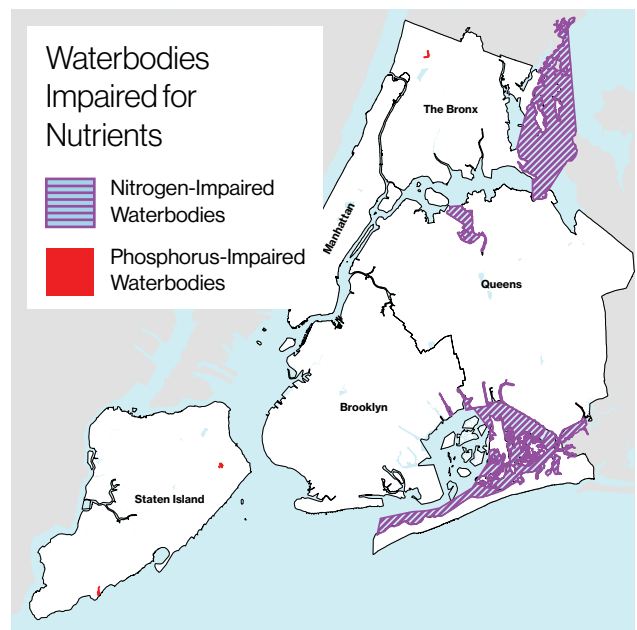
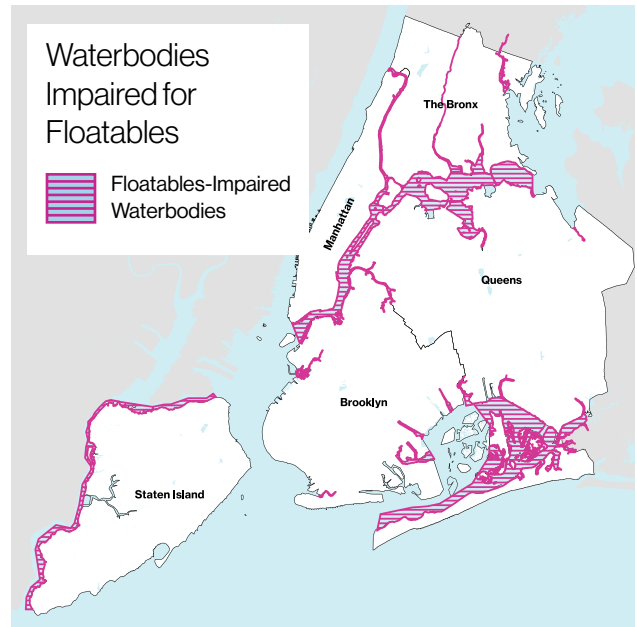
# Impaired Waters and Pollutants of Concern

Through its consolidated assessment and listing methodology, NYSDEC lists certain bodies of water as impaired. A waterbody is considered impaired when it fails to meet its NYSDEC-designated use (e.g., swimming, fishing, or recreational boating). In Appendix I<sup>2</sup> of the MS4 Permit, NYSDEC identifies impaired waters in NYC as well as the relevant pollutants of concern (POCs) for each waterbody. POCs are those pollutants causing the impairment of an impaired water segment. The POCs that have been identified for waterbodies in NYC are:

- **Pathogens (referred to in Appendix I as fecal coliform)** – Pathogens are disease-producing agents such as bacteria, viruses, or other microorganisms.
- **Floatables (referred to in Appendix I as garbage and refuse)** – Floatables are manmade materials such as plastics, papers, or other products, which have made their way to a waterbody.
- **Nutrients** – Nutrients, specifically phosphorus and nitrogen, can lead to algae blooms that deplete oxygen in the water, which kills aquatic life.

Refer to Chapter 11: Special Conditions for Impaired Waters for more information on impaired waterbodies.

<sup>2</sup> Appendix I of the MS4 permit includes the list of waterbodies as of the effective date of the permit, August 1, 2022.



## Related Stormwater Management Efforts

The City has several existing programs to manage stormwater runoff, which improve and protect water quality in local waterbodies.

### Jamaica Bay Watershed Protection Plan

In response to local legislation, DEP created a protection plan for the Jamaica Bay watershed. The Jamaica Bay Watershed Protection Plan was completed in October 2007 and established a pathway toward restoration and maintenance of the water quality and ecological integrity of the Bay by evaluating threats and coordinating environmental remediation and protection efforts in a focused and cost-effective manner. The protection plan also included the design, construction, and monitoring of several GI pilot projects.

### Bluebelt Initiatives

The Bluebelt initiative began in Staten Island more than 20 years ago and has expanded into the Bronx and Queens. The award-winning Bluebelt Program preserves natural drainage corridors such as streams, ponds, and wetlands and optimizes them to control and filter stormwater runoff. Managed by DEP, the program includes Bluebelt construction and drainage system maintenance and management.

### Sustainable Stormwater Management Plan

Released in December 2008, the Sustainable Stormwater Management Plan was the product of an interagency task force and provided a foundation for improving water quality in New York Harbor, increasing recreation opportunities, and restoring coastal ecosystems. The plan consisted of three primary objectives: to implement the most cost-effective and feasible source controls; to resolve the feasibility of promising technologies; and to explore funding options for source controls. Developed with significant input from environmental stakeholders, the plan set clear milestones for the strategic implementation of cost-effective stormwater source controls and laid a framework for GI in NYC.

### NYC Green Infrastructure Program

Building upon the successes and lessons of earlier efforts, the City established the NYC Green Infrastructure Program (GI Program). 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, sidewalks, and other public property. The GI Program also offers grants to private property owners to install various types of GI.

Jamaica Bay Restoration





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.

### **Combined Sewer Overflow Mitigation Program and the Long-Term Control Plans (LTCPs)**

As part of the SPDES Permits for all 14 DEP WRRFs located in NYC, to mitigate the impact of CSOs on water quality, the City implements CSO BMPs to address operation and maintenance procedures, maximize use of existing systems and facilities, and conduct planning efforts to maximize CSO capture. DEP annually reports on its progress in implementing CSO BMPs. Since the 1980s, DEP has invested in infrastructure projects that have reduced CSO volumes by over 80%.

In 2012, a consent order between DEP and NYSDEC initiated development of 11 Long Term Control Plans (LTCPs), which are comprehensive evaluations of long-term solutions to reduce the impacts of CSO events and to continue to improve water quality in NYC's waterbodies. Each LTCP is unique and seeks to develop approaches for the individual waterbody to achieve applicable State water quality standards. LTCPs are or will be implemented using a hybrid green and grey infrastructure approach to address, measure, and mitigate the effects of CSO events. The LTCP process has included robust community engagement with environmental stakeholders, neighborhood associations, recreational water users, elected officials, and community boards.



Green Infrastructure



Paerdegat Basin CSO facility

# NYC MS4 Stormwater Management Program (SWMP) Plan

The 2015 MS4 Permit required the City to develop a Stormwater Management Program (SWMP) Plan comprised of multiple programs designed to reduce the risk of pollution in stormwater runoff. NYSDEC approved the Plan on March 14, 2019.

This updated SWMP Plan (Plan) describes the ways in which the City satisfies the requirements of the MS4 Permit by managing stormwater discharges into and from the City's separate storm sewers. Implementation of the programs described in this Plan satisfies the MS4 Permit requirement to meet the MEP standard.

Most chapters of this Plan include a description of relevant City programs in place prior to the issuance of the MS4 Permits; new initiatives and/or program enhancements developed pursuant to requirements of the City's MS4 Permits; and measurable goals for future assessment of the SWMP Plan. The Plan also refers at times to Appendices, which include documents that either are required by the MS4 Permit or provide additional information.

Since 2018, the City has published an Annual Report on SWMP implementation, which includes a section on program updates that the City proposed as part of refining and adapting its program. The City continues to update SWMP Plan text annually but implements as soon as practicable any necessary changes identified during the reporting year.

This Plan consists of the following chapters:

## Chapter 1: Legal Authority and Program Administration

Describes the City's legal authority and administrative processes to implement the SWMP including interagency coordination during SWMP implementation; legislative and regulatory authority; the City's enforcement response plan (ERP); reliance on third parties (see also Part IV.K of the MS4 Permit); maintenance of adequate resources; and notification of entities regulated under the MS4 Permit. This chapter sets forth the City's compliance with Part III of the MS4 Permit.

## Chapter 2: Public Education and Outreach

Describes the City's Public Education and Outreach Program including existing programs; target audiences; pollutants and waterbodies of concern; education and outreach strategies; public reporting of illicit discharges or water quality impacts; proper management and disposal of pollutants of concern; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.A of the MS4 Permit.

## Chapter 3: Public Involvement and Participation

Describes the City's Public Involvement and Participation Program including existing programs; key stakeholders; public engagement during SWMP development; public comments on the Progress Reports and this Plan; ongoing public involvement and participation; mechanisms for public reporting and stormwater related requests; Annual Report public review process; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.B of the MS4 Permit.

## What are these yellow boxes?

Keep an eye out for these yellow boxes that appear throughout the Plan. They include information about public engagement and how you can stay involved.



**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 by:

- Visiting 311 online;
- Calling 311 or (212) NEW-YORK, (212) 639-9675, from outside New York City;
- Texting 311-692; or
- Downloading the mobile app.

311 is accessible to non-English speakers, available online in over 30 languages and by phone in over 120 languages.

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

Currently, the public is able to 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. This can also be used to report a potential illicit discharge from an MS4 outfall.
- Dry Weather Sewage Discharge Complaint**—Report of 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.

#### **Chapter 4: Mapping**

Describes the City's Mapping Program including existing programs; the Historical MS4 Map; delineation methods for the MS4 Map; the MS4 Map update process; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.C of the MS4 Permit.

#### **Chapter 5: Illicit Discharge Detection and Elimination (IDDE)**

Describes the City's IDDE Program including non-stormwater discharges; illicit discharge detection; illicit discharge trackdown, elimination, and notification; spill prevention and citywide containment and response; sanitary pipe seepage controls; public education and participation; staff training; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.D of the MS4 Permit.

#### **Chapter 6: Construction and Post-Construction**

Describes the City's Construction and Post-Construction Programs including the Stormwater Pollution Prevention Plan (SWPPP) review and approval process; the process to obtain DEP-issued Stormwater Construction Permits and Stormwater Maintenance Permits; education, certification, training; and measurable goals for program assessment. This chapter sets forth the City's compliance with Parts IV.E and IV.F of the MS4 Permit.

#### **Chapter 7: Pollution Prevention/ Good Housekeeping (PP/GH) for Municipal Facilities and Operations**

Describes the City's PP/GH Program including associated programs and controls for pesticide, herbicide, and fertilizer application; inventory and prioritization of municipal facilities and operations; self-assessments of municipal facilities and operations; City staff training program; GI feasibility for planned municipal upgrades (PMUs); requirements for third-party contractors; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.G of the MS4 Permit.

#### **Chapter 8: Industrial and Commercial Stormwater Sources**

Describes the City's program to address industrial and commercial stormwater sources including associated inspection programs; industrial and commercial facility inventory; unpermitted facility assessments; MSGP facility inspections, including no exposure facility inspections; tracking system; inspection staff training; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.H of the MS4 Permit.

#### **Chapter 9: Control of Floatable and Settleable Trash and Debris**

Describes the City's Floatable and Settleable Trash and Debris Control Program including floatables management programs; loading rate study; available technologies and controls; methodology for selecting technologies and controls; media campaigns; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.I of the MS4 Permit.

#### **Chapter 10: Monitoring**

Describes the City's Monitoring Program including MS4 Outfall Monitoring Program; MS4 monitoring procedures; evaluation of long-term trends in receiving water quality; measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.J of the MS4 Permit.

#### **Chapter 11: Special Conditions for Impaired Waters**

Describes the City's program for Impaired Waters including identification of impaired waterbodies and POCs; special conditions for impaired waterbodies without total maximum daily loads (TMDLs); special conditions for impaired waterbodies with approved CSO LTCPs; Coney Island Creek's customized stormwater control measures (SCMs); and measurable goals for program assessment. This chapter sets forth the City's compliance with Part II of the MS4 Permit.

#### **Chapter 12: Recordkeeping and Reporting**

Describes recordkeeping and data management for the SWMP; the MS4 Annual Report process and schedule; and measurable goals for program assessment. This chapter sets forth the City's compliance with Part IV.L and Part IV.M of the MS4 Permit.



# Legal Authority and Program Administration



Statue of Liberty



#### Jamaica Bay

On August 1, 2015, NYSDEC issued to NYC a SPDES permit (No. NY-0287890) that authorized the discharge of stormwater from the MS4 and required the City to implement measures, which protect and improve water quality, in order to reduce pollution in stormwater runoff. Part III of the 2015 MS4 Permit required the City to develop and implement a SWMP Plan, including BMPs the City performs to reduce the discharge of pollutants from the MS4 to the MEP. The federal Clean Water Act (CWA) and the New York State Environmental Conservation Law (ECL) established the MEP standard as the appropriate compliance standard for MS4s because of the unique nature of stormwater. Implementation of the SWMP achieves the MEP requirement.

On August 1, 2022, NYC received from NYSDEC a renewal of that permit. Part III of the 2022 MS4 Permit requires the City to:

- continue to implement the approved SWMP Plan, with any necessary modifications;
- maintain adequate legal authority to implement and enforce the SWMP;
- maintain an enforcement response plan (ERP);
- ensure adequate resources to comply with the MS4 Permit; and
- notify certain entities regulated under the MS4 Permit.

This chapter outlines the development and implementation of the SWMP; delineates City agency roles and responsibilities; details the City's legal authority to implement the SWMP; and includes the ERP (Appendix 1.1), third party certification requirements, and requirements for notification of entities regulated under the MS4 Permit.



# 1.1 Stormwater Management Program Administration

## The City's SWMP planning efforts began during MS4 Permit negotiations with NYSDEC in 2013.

There was coordination among agencies throughout SWMP development. This coordination has continued through SWMP implementation and negotiations on the renewal of the MS4 Permit.

### SWMP Development

In 2013, under Executive Order 429, the Mayor charged DEP with responsibility for coordinating efforts among City agencies with respect to all matters relating to the MS4 Permit requirements. Executive Order 429 also directed all mayoral agencies and the Department of Education (DOE) to collaborate with DEP. This collaboration included requirements that agencies:

- provide to DEP all information necessary for permit compliance
- implement controls included in the SWMP that fall within their responsibilities and work with the New York City Office of Management and Budget (OMB) to identify funding for SWMP implementation
- create and maintain adequate records and prepare any reports required by the MS4 Permit
- provide technical assistance and support to DEP within their areas of expertise, including training and education of agency staff and other parties.

Before NYSDEC issued the City's first MS4 Permit in 2015, the Mayor's Office initiated the Stormwater Controls Working Group, 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 Corrections (DOC)
- Department of Education (DOE)
- Department of Health and Mental Hygiene (DOHMH)
- Department of Transportation (DOT)
- Department of Parks and Recreation (DPR or 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 Resiliency (MOCEJ)

## Maximum Extent Practicable (MEP) Standard

Because of the unique nature of stormwater (an MS4 has limited control of its inputs and cannot treat them as a wastewater resource recovery facility can treat its influent before discharging it to a waterbody), the Clean Water Act<sup>1</sup> established the MEP standard as the appropriate compliance standard for the MS4s. The New York State Environmental Conservation Law also establishes the same standard.<sup>2</sup> Rather than requiring strict compliance with water quality standards through traditional end-of-pipe control techniques or numeric effluent limits, the MEP standard requires that the City implement all technically feasible and cost-effective best management practices (BMPs) that will reduce the discharge of pollutants to the MS4.

<sup>1</sup>33 U.S.C. § 1342(p)(3)(B)(iii)

<sup>2</sup>ECL § 17-0808(3)(c)

## Agency Roles and Responsibilities in the MS4 Area

Under the internal division of responsibilities agreed upon by the City, each agency is responsible for the MS4 area and infrastructure internal to its sites or otherwise within drainage areas that are under agency jurisdiction, as set forth by the NYC Charter.

Agency responsibilities include mapping the MS4 area and outfalls as detailed in Chapter 4: Mapping; conducting illicit discharge detection and elimination activities as detailed in Chapter 5: IDDE; complying with Construction and Post-Construction requirements as detailed in Chapter 6: Construction and Post-Construction; and implementing the PP/GH Program as detailed in Chapter 7: Pollution Prevention/Good Housekeeping for Municipal Operations and Facilities.

Some agencies have New York City Charter-required stormwater management responsibilities relevant to the MS4 Permit. These agencies have a more substantial role in stormwater management by virtue of their obligations and duties under the New York City Charter:

- DEP is responsible for providing water, disposing of sewage, and controlling water pollution. These responsibilities include responding to emergencies caused by releases or threatened releases of hazardous substances and managing the location, construction, alteration, repair, maintenance, and operation of DEP-owned sewers, including intercepting sewers. In addition, DEP is authorized to coordinate the actions of City agencies in complying with the MS4 Permit.
- DPR is responsible for managing and caring for all parks, squares, public spaces, playgrounds, playground fixtures, and other recreation properties, except those within the jurisdiction of DOE or other agencies. Maintenance and care of these areas extends to the sidewalks that immediately adjoin them. DPR is also responsible for planting and maintaining trees and other plantings in public places belonging to the City.
- DOB is responsible for enforcing provisions of the building code, zoning resolution, multiple dwelling law, labor law, and other laws, rules, and regulations that relate to the construction, alteration, maintenance, use, occupancy, safety, sanitary conditions, mechanical equipment, and inspection of buildings or structures in NYC.

- DOT is responsible for constructing, maintaining, and repairing public roads, streets, highways, parkways, bridges, and tunnels. These responsibilities include regulating, grading, curbing, flagging, and guttering of streets; and designing, constructing, and repairing of public roads, streets, highways, and parkways. These responsibilities also include paving, repaving, resurfacing, and repairing all public roads, streets (including marginal streets and places), highways, and parkways, and the relaying of pavement.
- DSNY is responsible for keeping streets clean and disposing of waste. These responsibilities include sweeping, cleaning, sprinkling, flushing, washing and sanding streets; removing and disposing of street sweepings, recyclables, organics, garbage, refuse, rubbish, and waste; and removing ice and snow from the streets. DSNY is also responsible for planning, constructing, operating, and maintaining transfer stations, garages, salt sheds, and other facilities necessary for performing its responsibilities.
- SBS is responsible for all functions and operations of the City relating to business and economic development; the enhancement of economic development and financial opportunity for minority and women owned business enterprises; and ensuring equal employment opportunity by City contractors. These responsibilities include the power and duty to exercise the functions of the City relating to the development, redevelopment, construction, reconstruction, operation, maintenance, management, administration, and regulation of public markets, wharf property, waterfront property, and airports within NYC.

## SWMP Implementation

Local Law 97 of 2017 (NYC Stormwater Law) revised section 1403 of the NYC Charter and codified DEP's role in coordinating the City's compliance with the MS4 Permit. DEP administers the overall SWMP, while each City agency is responsible for implementing specific SWMP components applicable to its own activities, facilities, and/or operations. Each Chapter of this Plan identifies the agencies responsible for implementing the initiatives and programs described. Figure 1.1 lists agencies and their corresponding roles in SWMP implementation. Email questions, comments, and suggestions for this Plan to [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov).

# Agency Roles and Responsibilities Matrix

Figure 1.1

|          | <b>Authority and Administration</b> |                 |                           |                 |                           |                               |                                      |         | <b>Stormwater Management Program</b> |   |       |                               |  |                           |  |                             |
|----------|-------------------------------------|-----------------|---------------------------|-----------------|---------------------------|-------------------------------|--------------------------------------|---------|--------------------------------------|---|-------|-------------------------------|--|---------------------------|--|-----------------------------|
|          | Program Administration              | Legal Authority | Enforcement Response Plan | Fiscal Analysis | Reliance on Third Parties | Public Education and Outreach | Public Involvement and Participation | Mapping | IDDE                                 | Construction and Post Construction Controls | PP/GH | Industrial/Commercial Sources | Control of Floatable and Settleable Trash and Debris | Monitoring and Assessment | Special Conditions for Impaired Waters | Recordkeeping and Reporting |
| City Law | ✓                                   | ★               | ✓                         | ✓               | ★                         | ✓                             | ✓                                    | ✓       | ✓                                    | ✓   | ✓     | ✓                             | ✓  | ✓                         | ✓                                      | ✓                           |
| DCAS     |                                     |                 |                           | ✓               | ✓                         |                               | ✓                                    | ✓       | ✓                                    |   | ✓     |                               |  |                           |  | ✓                           |
| DCP      |                                     |                 |                           |                 | ✓                         |                               | ✓                                    | ✓       |                                      | ✓   |       |                               |  |                           |  | ✓                           |
| DDC      |                                     |                 |                           | ✓               | ✓                         | ✓                             | ✓                                    |         | ✓                                    |   | ✓     |                               |  |                           |  | ✓                           |
| DEP      | ★                                   | ✓               | ★                         | ★               | ✓                         | ★                             | ★                                    | ★       | ★                                    | ★   | ★     | ★                             | ★  | ★                         | ★                                      | ★                           |
| DOB      |                                     |                 |                           |                 | ✓                         |                               | ✓                                    |         | ✓                                    |   |       |                               |  |                           |  | ✓                           |
| DOC      |                                     |                 |                           | ✓               | ✓                         |                               | ✓                                    | ✓       | ✓                                    |   | ✓     |                               |  |                           |  | ✓                           |
| DOE      |                                     |                 |                           | ✓               | ✓                         | ✓                             | ✓                                    | ✓       | ✓                                    |   | ✓     | ✓                             |  | ✓                         | ✓                                      | ✓                           |
| DOHMH    |                                     |                 |                           | ✓               | ✓                         |                               | ✓                                    |         | ✓                                    |   | ✓     |                               | ✓  |                           |  | ✓                           |
| DOT      |                                     |                 |                           | ✓               | ✓                         | ✓                             | ✓                                    | ✓       | ✓                                    |   | ✓     | ✓                             |  |                           |  | ✓                           |
| DPR      |                                     |                 |                           | ✓               | ✓                         | ✓                             | ✓                                    | ✓       | ✓                                    |   | ✓     | ✓                             |  | ✓                         | ✓                                      | ✓                           |
| DSNY     |                                     |                 |                           | ✓               | ✓                         | ✓                             | ✓                                    | ✓       | ✓                                    |   | ✓     | ✓                             |  | ✓                         | ✓                                      | ✓                           |
| FDNY     |                                     |                 |                           | ✓               | ✓                         |                               | ✓                                    | ✓       | ✓                                    |   | ✓     |                               |  |                           |  | ✓                           |
| NYPD     |                                     |                 |                           | ✓               | ✓                         |                               | ✓                                    | ✓       | ✓                                    |   | ✓     | ✓                             |  |                           |  | ✓                           |
| SBS      |                                     |                 |                           | ✓               | ✓                         |                               | ✓                                    | ✓       | ✓                                    |   | ✓     |                               |  |                           |  | ✓                           |



## 1.2 Legal Authority

This section describes the City’s legal authority to implement and enforce the SWMP. On July 15, 2022, the City submitted to NYSDEC, pursuant to the 2022 MS4 Permit requirement in Part III.B.1, a re-certification of its legal authority.

### Enhanced Legislative Authority

Pursuant to the 2015 MS4 Permit, the City identified three programs that required supplemental legislation to allow the City to develop the full legal authority necessary to the City’s meeting its permit obligations:

- Illicit Discharge Detection and Elimination (IDDE)
- Construction Site Stormwater Runoff Control and Post-Construction Stormwater Management
- Industrial and Commercial Stormwater Sources

For all three programs, the City acts in a regulatory capacity to oversee and/or enforce requirements regarding activities in the MS4 area that have the potential to contribute pollutants to stormwater runoff and the waterbodies surrounding NYC. Both the Industrial/Commercial and Construction/Post-Construction programs involve the City’s assumption of responsibility for administering, within the MS4 area, portions of existing New York State stormwater programs (CGP and MSGP). The IDDE program continued DEP’s robust existing program to detect and address illicit discharges to the sewer system.

Local Law 97 of 2017, the NYC Stormwater Law, consolidated, clarified, and supplemented the City’s legal authority to regulate stormwater discharges into and from its MS4. This NYC Stormwater Law is available on the City website<sup>3</sup>.

### Enhanced Regulatory Authority

The NYC Stormwater Law provided the City with sufficient legal authority to complete the rulemaking necessary for the three regulatory programs mentioned above. The rules were all effective by June 1, 2019.

## 1.3 Enforcement Response Plan

As required by the MS4 Permit, Part III.C, the City developed and continues to implement an enforcement response plan (ERP), which sets forth the City’s potential responses to violations as needed to achieve compliance with requirements of the IDDE, Construction and Post-Construction, and Industrial and Commercial programs (Permit Parts IV.D, IV.E, IV.F and IV.H, respectively). The ERP is a protocol for investigating and documenting violations of the regulatory requirements of these three programs and, where appropriate, enforcing against the violators.

As the agency responsible for administering the above-referenced programs on behalf of the City, DEP implements the ERP in cooperation with other City agencies, including DCP, DOB, and SBS.

DEP bases its approach on progressive enforcement, as required by the MS4 Permit Part III.C.1, addressing “repeat and continuing violations” through “progressively stricter responses,” taking into consideration the violator’s responsiveness and history of violations, as well as the severity and type of violation. Enforcement responses include verbal warnings, written summonses (formerly known as “notices of violation” or “NOVs”), citations with civil and administrative penalties, criminal penalties, stop-work orders, cease and desist orders, and withholding or revocation of plan approvals or permits.

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<sup>3</sup> [https://www1.nyc.gov/assets/buildings/local\\_laws/l197of2017.pdf](https://www1.nyc.gov/assets/buildings/local_laws/l197of2017.pdf)

## Rulemaking Process

### Step 1: Agency drafts rule

The New York City Charter gives certain agencies the authority to propose rules. When an issue arises, agencies analyze the problem and investigate various solutions. If it is determined that a new rule would be the best course of action, a proposal will be drafted. Agencies also sometimes propose rules because they are mandated by law to do so.

### Step 2: Agency notifies public of proposed rule

Before an agency can issue a rule, the public must be given the opportunity to review the proposed rule and provide comments, either by submitting suggestions in writing or by speaking at a public hearing.

To that end, the agency must submit official notice to the City Record, the City Council, community boards, media outlets, and civic organizations, as well as the NYC Rules website.

The official notice must include:

- Purpose and text of the proposed rule
- Explanation of the legal authority given to the agency
- Time and place of public hearing
- Deadline for submitting comments on NYC Rules website or in writing

Agencies are required to provide notice of the rule at least 30 days prior to the scheduled public hearing, or the end of the comment period, whichever comes first.

### Step 3: Agency holds public hearing

The agency holds a public hearing to discuss the proposed rule and then reviews all of the testimony that has been submitted. Testimony includes any written comments submitted on the NYC Rules website or, through the mail, and spoken testimony provided at the public hearing.

### Step 4: Agency publishes final rule

Once all testimony has been reviewed, the agency will modify the rule based on the public's feedback, if necessary, then draft a final version. A copy is posted on NYC Rules, published in the City Record, and submitted to the City Council.

### Step 5: Final rule is adopted

The rule takes effect no earlier than 30 days after publication of the final version.

## 1.4 Reliance on Third Parties

Pursuant to the MS4 Permit, Parts IV.G.1.h and IV.K, the City must provide adequate assurance, through a signed certification statement, that any third-party entity (e.g., consulting firms, construction contractors) that implements any portion of the SWMP complies with the MS4 Permit requirements applicable to the work performed. The MS4 Permit also requires any third-party entities performing municipal operations (e.g., street sweeping, snow removal, lawn/grounds care, etc.) to comply with relevant MS4 Permit provisions<sup>4</sup>.

City agencies provide each third party with a copy of the MS4 Permit and include in each contract a General Certification by which the third party certifies that it will comply with applicable MS4 Permit requirements. The General Certification also identifies the deliverables in the contract that are subject to individual certification and for which the third-party entity will provide a Certification of Deliverable upon completion of the required activity. The Certification of Deliverable then confirms that the third party developed the relevant deliverable in compliance with all applicable requirements of the MS4 Permit.

## 1.5 Adequate Resources

Part III.D of the MS4 Permit requires the City to continue to secure the resources necessary to meet all requirements of the Permit.

## 1.6 Notification of Entities Regulated Under MS4 Permit

Part III. E of the MS4 Permit requires the City to provide notice to entities that are subject to the Industrial/Commercial and Construction/Post-Construction programs required by the MS4 Permit.

### Industrial and Commercial Stormwater Sources.

The City must notify newly permitted owners or operators of industrial facilities subject to the MSGP of the local requirements for controlling stormwater discharges from these facilities to the MS4.

### Construction Site Stormwater Runoff Control

The City must notify existing owners or operators and have a notification procedure for future owners or operators of construction activities subject to the CGP. The notification must include the local requirements and procedures for control of stormwater from these activities to the MS4, including the SWPPP review and acceptance process.

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<sup>4</sup> Third-party entities that perform pollution prevention and good housekeeping for municipal operations, which include “any operation or facility serving a New York City governmental purpose and over which New York City has operational control,” must provide the required certifications.



# Public Education and Outreach



Visitor Center at Newtown Creek Wastewater Treatment Plant





DEP partners with NYCHA for Earth Day

## Part IV.A of the MS4 Permit requires the City to implement a public education and outreach program.

This chapter describes the City's Public Education and Outreach Program, which is designed to provide information to the public and target audiences about:

- Impacts of stormwater discharges on waterbodies
- Stormwater pollutants and their sources
- Actions to reduce pollutants in stormwater runoff
- Ways to report illicit discharges and water quality issues
- Hazards associated with illicit discharge and improper disposal of waste

The City has many education and outreach initiatives that inform a broad range of stakeholders about wastewater treatment, sewer systems, green infrastructure, stormwater management, sources of pollutants associated with stormwater, and the potential impact on water quality of pollutants carried in stormwater. These initiatives are designed to empower the public to take measures to reduce sources of pollutants that adversely impact water quality.



## 2.1 Educational Programs

The City has multiple education and outreach programs that seek both to increase the general environmental literacy of New Yorkers and to educate them specifically about issues related to stormwater. New materials are periodically created to enhance existing programs, while new programs are created as needs or opportunities are identified. Collectively, these programs are the foundation of Public Education and Outreach. The programs that address stormwater, water quality, illicit discharges, pollution sources, or pollution prevention and other stewardship activities are described in Table 2.1. The City will continue to engage the public and seek to target residents, students, educators, businesses, and community groups with new and enhanced programs and resources.



Art & Poetry winners tour Newtown Creek Waste Water Resource Recover Facility, April 29, 2023

### Summary of the City's Stormwater-Related Education and Outreach Programs

Table 2.1

| Program Name  | Agency       | Description  |
|---|--------------|--|
| <b>311</b>  | <b>DOITT</b> | 311 provides the public with quick, easy access to all City services and information; it is the City's main source of government information and non-emergency services.   |
| <b>Adopt-a-Basket</b>                                   | <b>DSNY</b>  | Local businesses or community groups monitor local litter baskets. When the baskets are three-quarters full, adopters remove plastic liners, tie them, leave them next to the basket, and insert a new liner. This effort helps prevent trash from piling on top of the basket and spilling onto sidewalks and streets.  |
| <b>Adopt-a-Bluebelt</b>                                 | <b>DEP</b>   | Local community groups, companies, and individuals enhance Staten Island's open spaces by acting as sponsors who adopt parts of the Bluebelt. For more information, visit: <a href="https://www.nyc.gov/site/dep/water/the-bluebelt-program.page">https://www.nyc.gov/site/dep/water/the-bluebelt-program.page</a>   |
| <b>Harbor Protectors (formerly Adopt-a-Catch Basin)</b> | <b>DEP</b>   | Local organizations participate in a volunteer program that helps keep neighborhood catch basins clear of trash and debris. This effort helps reduce localized flooding and keeps trash and debris out of waterbodies. For more information visit: <a href="https://www1.nyc.gov/site/dep/whats-new/harbor-protectors.page">https://www1.nyc.gov/site/dep/whats-new/harbor-protectors.page</a>   |
| <b>Adopt-a-Highway</b>                                  | <b>DOT</b>   | Sponsors adopt highway segments and perform litter removal and beautification.   |
| <b>Water Resources Annual Art and Poetry Contest</b>    | <b>DEP</b>   | Second through twelfth grade students in New York City and in the upstate watersheds of the City's drinking water supply create original art and poetry that express their knowledge and reflect an appreciation for our shared water resources. Recently highlighted themes included water quality, green infrastructure, climate change, stormwater, and pollution prevention. For more information visit: <a href="https://www.nyc.gov/site/dep/environment/water-resources-art-poetry-contest.page">https://www.nyc.gov/site/dep/environment/water-resources-art-poetry-contest.page</a> |
| <b>Automotive Associations</b>                          | <b>DEP</b>   | DEP provides automotive associations with information on proper waste disposal as well as vehicle washing and refueling.   |

Table 2.1

| Program Name  | Agency                | Description  |
|---|-----------------------|--|
| <b>Business Outreach</b>  | <b>DEP</b>            | DEP reaches out to various businesses through meetings, door-to-door visits, workshops, mailers, and on-site visits. DEP also works with its primary partners and their members (Local Development Corporations, Business Improvement Districts, Chambers of Commerce, Merchant Associations and Trade Associations) to distribute materials.  |
| <b>Catch Basin Marking</b>  | <b>DEP</b>            | Catch basin markers inform the public that the catch basins drain directly to local waterbodies and that nothing should be dumped into them. DEP's current sewer design standards require the cast iron curb pieces of new catch basins to be stamped with a message that reads: "Dump No Waste! Drains to Waterways." Additionally, in the Staten Island Bluebelt drainage areas, DEP installs "no dumping" medallions on the catch basins without the stamp in the curb piece.   |
| <b>Trash It. Don't Flush It.<br/>(formerly Cease the Grease)</b>              | <b>DEP</b>            | DEP distributes information to food service establishments, businesses, and residences throughout the City on how to properly dispose of used cooking oil. In addition, school programs and online education modules are filled with lessons, student activities, and additional resources that focus on the proper disposal of grease and the importance of protecting our vital infrastructure.  |
| <b>Trash Free NYC Waters<br/>(formerly Clean Streets =<br/>Clean Beaches)</b> | <b>DEP &amp; DSNY</b> | This annual educational initiative aims to improve the cleanliness and aesthetic of City beaches by reducing littering on streets and in parks.  |
| <b>Community Clean-ups</b>  | <b>DSNY</b>           | DSNY supports local community groups and block associations in their volunteer efforts to keep their neighborhoods clean through local block and street area clean-ups by offering free loans of clean-up tools and equipment.   |
| <b>Community Right-to-Know<br/>Workshops</b>                                  | <b>DEP</b>            | DEP conducts annual workshops for facilities regulated under DEP's Community Right-to-Know (RTK) Program. Facilities regulated under the RTK program must annually report any chemicals that they handle or store on their premises and which meet the reporting thresholds. DEP provides participants at these workshops with an overview of the MS4 Program as well as literature and web resources pertaining to the program.   |
| <b>Environmental Education</b>  | <b>DEP</b>            | DEP educators develop, implement, and assess a vast array of multi-disciplinary educational resources for Pre-K through college graduate students, formal and non-formal educators, curriculum specialists, and administrators. Resources include, but are not limited to, class lessons with inquiry-based activities, professional development opportunities, funding, field trips, student research and curriculum development assistance, presentations and tours, online education modules and print materials, and theatrical performances.<br><br>For more information, visit: <a href="http://nyc.gov/dep/education">nyc.gov/dep/education</a> or email <a href="mailto:educationoffice@dep.nyc.gov">educationoffice@dep.nyc.gov</a> |
| <b>Forgot your bag?</b>   | <b>DPR</b>            | DPR will place dispensers with signage in targeted areas identified during its inspections to improve cleanliness and educate the public about pet waste clean-up, helping to ensure that we provide New Yorkers and visitors alike with clean, green and safe parks.  |
| <b>IDDE Outreach and Education</b>  | <b>DEP</b>            | DEP partners with local organizations, elected officials, and community boards to educate the public on DEP's IDDE Program. This engagement includes efforts in Coney Island Creek such as Community Workshops and an MS4 Outfall Sign Pilot to educate the public on how to report potential illicit discharges. For more information see Chapter 11: Special Conditions for Impaired Waters.   |

Table 2.1

| Program Name                                       | Agency      | Description   |
|--|-------------|---|
| <b>Visitor Center at Newtown Creek</b>             | <b>DEP</b>  | Located at the Newtown Creek WRRF, the Visitor Center provides a popular venue for teaching youth and adults about the New York City water cycle, water quality, distribution, consumption, wastewater treatment, stormwater management, climate change, harbor water quality, and stewardship (such as water conservation, proper disposal of litter, and care for the urban forest).  |
| <b>Park Stewardship</b>                            | <b>DPR</b>  | DPR coordinates volunteer opportunities that enable volunteers to help restore natural areas, care for street trees, clean and beautify parks, and monitor wildlife. These activities can include the care and restoration of natural areas through removal of invasive plants and floatable debris along coastlines. In addition, the program provides training to dedicated Super Stewards, to advance their independent care of local community green spaces. For more information, visit: <a href="https://www.nycgovparks.org/reg/advanced-stewardship">https://www.nycgovparks.org/reg/advanced-stewardship</a>   |
| <b>SAFE Disposal Events</b>                        | <b>DSNY</b> | DSNY hosts SAFE (Solvents, Automotive, Flammables, and Electronics) Disposal Events throughout the year in all five boroughs, to help residents safely dispose of harmful household products.   |
| <b>School Sustainability Coordinator Trainings</b> | <b>DOE</b>  | The DOE Office of Sustainability hosts borough-based trainings annually for school Sustainability Coordinators, teachers, and other school staff. Workshops address an array of topics such as waste reduction/recycling, energy conservation, green space and infrastructure, water quality and current issues, environmental education, and stewardship in partnership with City agencies and nonprofit organizations. These trainings provide an opportunity to promote educational resources/programs to educators.   |
| <b>Special Waste Drop-Off Sites</b>                | <b>DSNY</b> | DSNY maintains a special waste drop-off site in each borough. The sites are open from 10 am to 5 pm every Saturday and the last Friday of the month. Residents can drop off harmful household products including batteries, latex paint, and electronics.   |
| <b>STEAM Initiatives Program</b>                   | <b>DDC</b>  | DDC hosts a diverse and inclusive pipeline of public education and outreach initiatives for New York City's youth to engage in a myriad of disciplines, ultimately enhancing students' awareness in fields such as Science, Technology, Engineering, Art/Architecture, and Mathematics (STEAM) in our educational system. Customized outreach programs enhance student awareness of these fields, beginning in middle school and proceeding through high school and college. These programs further enrich the broader goals of STEAM: to bring awareness on the importance of STEAM in our educational system. Additionally, DDC has developed a Coastal Resiliency curriculum. Hurricane Sandy devastated parts of New York City and in the process raised awareness of the effects global climate change and extreme weather can have on coastal areas. New York City has begun to develop ways to protect the shoreline. DDC's "Saving the Shore" focuses on the redesign of New York City's waterfront. For more information, visit: <a href="https://www1.nyc.gov/site/ddc/steam/steam.page">https://www1.nyc.gov/site/ddc/steam/steam.page</a> |
| <b>The Natural Classroom</b>                       | <b>DPR</b>  | Using the City's park system as an outdoor classroom, school teachers with the support of Urban Park Rangers offer programs on climate change adaptation, urban forestry, water quality testing, conservation, ecology, and ichthyology.  |
| <b>Weekend, Pop-up, and Custom Adventures</b>      | <b>DPR</b>  | Residents participate in programs that connect them to and educate them about nature. Example programs include canoeing, fishing, and opportunities to contribute to conservation, restoration, and environmental stewardship of local parks and waters. For more information, visit: <a href="https://www.nycgovparks.org/programs/rangers">https://www.nycgovparks.org/programs/rangers</a>   |



## 2.2 Pollutants and Waterbodies of Concern

This Public Education and Outreach Program aims to educate New Yorkers on the proper management and disposal of potential pollutants. Many programs focus on actions the public can take to reduce pollutants at the source. Table 2.2 describes in more detail these pollutants, their potential impact, and desired behaviors that can reduce those impacts.

The City cares about the quality and health of all of its waterbodies. In this Plan, the City puts particular emphasis on the waterbodies of concern listed as impaired in Appendix I of the MS4 Permit and on their associated impairments. For more information on impaired waters, refer to Chapter 11: Special Conditions for Impaired Waters.

### Addressing Pollutants through the Public Education and Outreach Program

Table 2.2

| Pollutants of Concern                      | Impact to Waterbodies  | Targeted Sources   | Desired Behaviors  |
|--|--|--|--|
| <b>Floatables (Garbage and Refuse)</b>     | Trash and debris may carry toxins and pathogens that pose a risk to human health. Fish and wildlife may be harmed by becoming entangled in or ingesting trash and debris. Trash and debris are also unsightly and may deter recreational use of waterbodies. | <ul style="list-style-type: none"> <li>Littering</li> <li>Illegal dumping</li> <li>Improper disposal of waste</li> </ul>   | <ul style="list-style-type: none"> <li>Choose reusable items (bags, bottles, mugs) rather than single use items</li> <li>Keep streets clean</li> <li>Report illegal dumping</li> <li>Follow DSNY guidelines for proper disposal including recycling and waste reduction.</li> </ul>  |
| <b>Nutrients (Nitrogen and Phosphorus)</b> | Excessive amounts of nitrogen and phosphorus can cause harmful algal blooms and create low oxygen conditions that harm aquatic life.   | <ul style="list-style-type: none"> <li>Lawn/plant fertilizer</li> <li>Illicit discharges of sanitary waste</li> <li>Pet waste</li> <li>Green waste</li> </ul>        | <ul style="list-style-type: none"> <li>Use fertilizer sparingly and never before storms</li> <li>Always apply fertilizer in accordance with the manufacturer's instructions on product label</li> <li>Follow DEP rules to properly connect pipes carrying sanitary waste to the sanitary sewer</li> <li>Properly dispose of pet waste</li> <li>Never dump anything into a catch basin</li> </ul> |
| <b>Pathogens (Fecal Coliform)</b>          | Pathogens can cause disease and make waters unfit for recreation. Pathogens can also contaminate aquatic wildlife and then cause illness in people who consume the fish and shellfish.   | <ul style="list-style-type: none"> <li>Pet waste</li> <li>Illicit discharges of sanitary waste</li> </ul>  | <ul style="list-style-type: none"> <li>Follow DEP rules and regulations to properly connect pipes carrying sanitary waste to the sanitary sewer</li> <li>Properly dispose of pet waste</li> <li>Report illegal dumping</li> </ul>  |
| <b>Oil and Grease</b>                      | Oil and grease can be toxic to plants, aquatic life, and wildlife that live in or near contaminated waterbodies. Oil and grease can also have a negative effect on the sewer system.   | <ul style="list-style-type: none"> <li>Spills and leaks from vehicles or improper storage</li> <li>Improper disposal of products</li> <li>Illegal dumping</li> </ul> | <ul style="list-style-type: none"> <li>Properly maintain vehicles</li> <li>Properly store materials</li> <li>Follow DSNY guidelines for proper disposal of waste</li> <li>Follow DEP guidelines for proper disposal of oil and grease</li> <li>Report illegal dumping</li> </ul>   |
| <b>Toxic or harmful substances</b>         | Toxic or other harmful substances can harm and kill plants, aquatic life, and wildlife that live in or near contaminated waterbodies. These substances are also hazardous to recreational users of waterbodies.  | <ul style="list-style-type: none"> <li>Improper disposal of materials such as household cleaners, paint, chemicals, and pharmaceuticals</li> </ul>                   | <ul style="list-style-type: none"> <li>Follow DSNY guidelines for proper disposal of waste</li> <li>Report illegal dumping</li> </ul>  |

## 2.3 Target Audiences

The Public Education and Outreach Program includes initiatives that target specific audiences as identified below. Chapter 3: Public Involvement and Participation includes a list of key stakeholders who provided input throughout the development of the SWMP. Public Education and Outreach and Public Involvement and Participation are naturally connected to one another. As one stakeholder put it, "Meaningful public involvement and participation depends on an educated public." One of the key goals of the Public Education and Outreach Program is to encourage these target audiences and key stakeholders to work with one another and the City to improve water quality.

### Students

Pre-kindergarten through college-level students gain the knowledge, skills, attitudes, and commitment to work individually and collectively toward solutions for current environmental problems. Students can then inform family and friends of their potential impact on the environment and on their own neighborhoods and the City, sharing and applying lessons learned from school programs as they continue their education, make career choices, and engage in stewardship activities.

### Educators

Classroom teachers and non-formal educators (e.g., environmental organizations, youth groups, and cultural institutions) play a key role in helping address and reduce sources of pollutants. Through ongoing professional development opportunities; print and online material; funding for bus tours and special projects; and curriculum development assistance and other resources, DEP programs help to provide knowledge, skills, and partnership opportunities that are designed to engage a diverse audience. Educator trainings, including topics such as climate change, wastewater treatment, green infrastructure, stormwater management, and the NYC water cycle, are aligned with New York State and New York City learning standards.

### Residents

Residents can have a tangible impact on NYC and local waterbodies when they are educated on the importance of keeping streets clean and properly disposing of household waste.

### Business Community

Businesses with the potential to be sources of pollutants, including litter, oil, grease, and toxic materials, are an ideal group to receive education about proper storage and disposal of materials and can then serve as potential partners in educating their staff and customers.

### Community Groups

Community groups, such as neighborhood organizations, cultural organizations, elected officials, and religious organizations, can play a big role in keeping NYC

communities clean and healthy. They provide another avenue to reach residents and businesses. Community groups provide an excellent forum for education on general environmental literacy, and the ways in which communities can help reduce the presence of pollutants in NYC waterbodies.

### Environmental Advocates

Environmental advocates are important partners in the mission to protect and restore waterbodies. The City will continue to engage environmental advocates to get feedback on programs as they are developed and implemented.

Staten Island Juvenile Eel Count





Artwork by Brian, 6th grade student at the Bay Academy I.S. 98, Brooklyn, for DEP's 31st Annual Water Resources Art & Poetry Contest

## 2.4 Education and Outreach Strategies

The City has identified several strategies to conduct education and outreach to target audiences. These strategies include the creation of educational and informational materials such as handouts, flyers, behavior-change campaigns, and webpages. These new efforts seek to increase the public's understanding of both environmental topics and stormwater specific issues. The City continues to partner with local organizations, schools, environmental groups, and others to implement strategies that relate to the SWMP.

### Information and Reporting Hotline

In New York City, 311 is the best way to connect with the City on stormwater-related issues. 311 provides the public with quick, easy access to all NYC government services and information while also helping agencies improve service delivery.

### Agency Websites and Social Media

Many City agencies maintain websites and social media presence (e.g., Twitter, Instagram, Facebook, and Flickr) that communicate important information to the public. DEP developed a designated MS4 webpage at [www.nyc.gov/dep/ms4](http://www.nyc.gov/dep/ms4) to ensure permit-related submittals, reports, and materials are easily accessible. In addition, DSNY's website<sup>5</sup> contains information on proper set-out for disposal and collection of trash, debris and waste material, and sidewalk/street cleaning. DPR<sup>6</sup> posts information on park facilities, events, and activities.

### Public Signage

Various signs are posted throughout the City in open display to educate the public. Some examples of public signs are catch basin markings, outfall signs, and Newtown Creek Nature Walk signs.

### Cooperative Efforts with Local Organizations and Environmental Advocates

Local organizations and environmental advocates are effective and innovative public educators. The City's support of local organizations may include providing guidance and professional development training, or staff time and materials, depending on the type of partnership; professional development workshops; print materials, funding for bus tours and special projects; and teaching lessons to complement the curriculum.

### Curriculum Development and Other Resources for Teachers

The City provides educators with a variety of multidisciplinary resources, including STEM (Science, Technology, Engineering and Mathematics), and resources related to stormwater, climate change, GI, harbor water quality, wastewater treatment, and stewardship. These resources include online educational modules and background information about various water topics, teacher lessons, student activities, bibliographies, and additional resources for partner organization support. DEP also assists educators with the development of their own curricula, designed for their specific needs.

<sup>5</sup> <http://www1.nyc.gov/assets/dsny/site/home>

<sup>6</sup> <https://www.nycgovparks.org/>



## Electronic Communication

The City maintains an email account (MS4@dep.nyc.gov) for the public to report and request stormwater-related information. This email account is included in public presentations and listed on distributed educational materials.

## Informational Materials

The City has developed a variety of materials, such as fact sheets and brochures, designed to educate the public on the MS4 Permit programs, stormwater pollutants, and steps to reduce pollutants. DEP makes these materials available through the DEP website.<sup>7</sup>

## Public Access to Waterbodies

The City has public access locations, which are essential for outdoor recreation such as hiking, fishing, boating, and scenic viewing. For example, the DPR Urban Park Rangers conduct tours and programming through the Natural Classroom, Ranger Conservation Corps, Weekend Adventures, and Adventure Course & Custom Adventures. DEP's Newtown Creek Nature Walk, located at the Newtown Creek WRRF in Greenpoint, Brooklyn, allows young people and adults to learn about the City's water resources.

## Paid Media

The City occasionally uses paid media, such as advertising on buses, subways, billboards, and digital platforms, when opportunities arise. Prior to and during SWMP development, the City ran several media campaigns related to pollution prevention, as described in Appendix 9.2.

## Special Programming

The City has several special programs that seek to educate and communicate information relevant to stormwater, water quality, pollution sources, and pollution prevention. Example programs include Trash It. Don't Flush It. (formerly Clean Streets = Clean Beaches) and the annual Water Resources Art and Poetry Contest.

## Stewardship and Volunteerism

The City encourages and supports public stewardship and volunteerism, which, depending on the activity, can range from providing guidance and staff time, to training volunteers and providing resources.

## Workshops, Trainings, Presentations, and Other Events

The City conducts workshops, trainings, and presentations to help educate target audiences on SWMP implementation; stormwater management; and pollutant impacts, sources, and prevention. DEP does outreach at the request of the public and customizes the messages to specific audiences. For additional information, please visit the DEP website.<sup>8</sup> DEP also partners with other City agencies, including DOE, to provide training programs for their staff to support and enhance their own stormwater outreach and education efforts.

<sup>7</sup> <http://www.nyc.gov/html/dep/html/stormwater/ms4.shtml>

<sup>8</sup> [http://www.nyc.gov/html/dep/html/environmental\\_education/index.shtml](http://www.nyc.gov/html/dep/html/environmental_education/index.shtml)

Clean Streets = Clean Beaches event at MCU Park



## Catch Basin Stenciling Program

The City program Harbor Protectors was designed to encourage stakeholders to clear catch basin gratings and stencil catch basins with educational messages. For more information visit the Harbor Protectors webpage: <https://www1.nyc.gov/site/dep/whats-new/harbor-protectors.page>

## 2.5 Public Reporting of Illicit Discharges or Water Quality Impacts

The City encourages the public to use 311 to report the presence of illicit discharges or water quality impacts associated with discharges from the MS4. 311 is accessible in many languages and through several platforms. The public can report or seek information related to fire hydrants, catch basins, illegal dumping, dirty conditions, dry weather discharges, and other issues.

The public can make illicit discharge or water quality reports by calling 311 or by visiting 311 online. The City is continually improving 311 and will work to better facilitate public reporting of issues relevant to water quality. Refer to Appendix 2.1 for 311 Complaints related to MS4/Stormwater Management Issues. All 311 service requests since 2010 are available to the public through NYC Open Data.<sup>9</sup>

<sup>9</sup> <https://data.cityofnewyork.us/Social-Services/311-Service-Requests-from-2010-to-Present/erm2-nwe9>

## 2.6 Proper Management and Disposal of Pollutants of Concern

The City conducts a variety of educational activities aimed at residents, businesses, schools, and non-profits to facilitate the proper management of waste, including used oil, toxic materials, pharmaceuticals, household cleaners, and pet waste. Information on these efforts is available on the DSNY website and through 311.

Additionally, DSNY helps residents dispose of harmful household products safely. These efforts include organizing and promoting SAFE (Solvents, Automotive, Flammables, and Electronics) Disposal Events and directing residents to businesses or recyclers that take back harmful products such as batteries, electronics, motor oil, and pharmaceuticals.

Students from the New York Harbor School participate in an education program







Wolfe's Pond Bluebelt Cleanup, Staten Island

# 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](http://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 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.





## 2.7 Measurable Goals and Program Assessment

Table 2.3 lists measurable goals and measures for identified Public Education and Outreach BMPs. MS4 Annual Reports include these measures to assess the status of each measurable goal and BMP. Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

### Summary of BMPs, Measurable Goals, and Measures for Public Education and Outreach

Table 2.3

| Best Management Practice (BMP)                                   | Measurable Goals   | Measures   |
|--|--|--|
| <b>Provide an ongoing public education and awareness program</b> | Develop, implement, and assess an ongoing public education and outreach program, including educational and informational activities related to illicit discharges for businesses and the general public. | List of education and outreach programs/ events and relevant metric(s) for each (e.g., number of participants, events, or materials distributed) |
|  |  | List of planned educational and outreach programs/activities to be undertaken in the next reporting cycle  |
| <b>Facilitate public reporting of illicit discharges</b>         | Promote, publicize, and facilitate public reporting of illicit discharges and potential water quality impacts  | Summary of public reports received by 311  |

The pond tank at Oakwood Beach Wastewater Resource Recovery Facility



# Public Involvement and Participation





"Stronger Through Water" event hosted by the U.S. Ambassador Linda Thomas Greenfield at The New York Public Library, on March 23, 2023.





Stakeholders at an LTCP meeting where SWMP updates were shared

Whether they are 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, a variety of stakeholders participate in the City's efforts to improve water quality. In accordance with Part IV.B of the MS4 Permit, the City implements a public involvement and participation program designed to:

- Identify key individuals and groups interested in or affected by the SWMP and seek input from them to support SWMP implementation
- Describe public involvement/participation stormwater-related activities the City will undertake to provide access to those individuals and groups to provide their input
- Provide opportunities for the public to participate in implementation, review and substantive revision of the SWMP
- Provide opportunities for, and response to, public comments on this Plan and on MS4 Annual Reports
- Provide a mechanism for the public to report and request stormwater-related information.

This chapter outlines the City's Public Involvement and Participation strategies for furthering implementation of this Plan and identifies goals for involving the public during SWMP implementation.

## 3.1 Key Stakeholders

The City has identified key stakeholders through their demonstrated interest in the MS4 Permit, participation in other water quality programs, and/or their potential to be affected by SWMP implementation. These stakeholders fall into several categories:

- Students and educators
- General public/NYC residents
- Environmental stakeholders
- Neighborhood associations and other community-based groups
- Governmental entities (e.g., New York City Housing Authority (NYCHA), Metropolitan Transit Authority (MTA), School Construction Authority)
- Elected officials and Community Boards
- Industrial and commercial business communities
- Design, construction, and development community

Members of the public can always sign up to receive communications about the SWMP and other DEP programs at <https://nycwater.substack.com/>.

## 3.2 Public Involvement and Participation

The City seeks to involve the public in the implementation of the SWMP. These efforts include outreach and stewardship programs, described in more detail in Chapter 2: Public Education and Outreach, which provide robust opportunities for both public involvement and participation; 311 and City websites, which enable the public to make reports and requests related to stormwater; and the MS4 Annual Report, which allows the public to review and comment on SWMP implementation.

### Mechanisms for Public Reporting and Stormwater-Related Requests

The City facilitates public reporting using various strategies. These include, but are not limited to, 311, City agency websites, electronic communication, workshops, and presentations. These strategies are also part of the Public Education and Outreach Program and are described in further detail in Chapter 2: Public Education and Outreach. To report stormwater-related concerns or receive information about stormwater, the public can contact 311. The public may also obtain stormwater-related information by visiting the DEP website or emailing the MS4 team at [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov).

### MS4 Annual Report Public Review Process

The City submits to NYSDEC by September 30 each year, an MS4 Annual Report that summarizes the City's MS4 permit-related activities performed during the previous calendar year (reporting period January 1 – December 31). Prior to submitting the report, the City publishes a draft report online for public review and comment and, by July 1 of each year, holds a public meeting to present the draft report and receive public input. The City notifies key stakeholders through an email announcement that the draft report is available online for review and includes the date, time, and location of the meeting. The City complies with the requirements of Article 7 of the New York State Public Officers Law.



The final MS4 Annual Report includes a summary of all public comments received, the City’s responses, and a description of any changes the City will incorporate into the SWMP as a result of the public’s input. Once submitted to NYSDEC, the final MS4 Annual Report is available on DEP’s website and can be made available to the public at DEP’s office. For comments received after the City has submitted a final Annual Report to NYSDEC, the City will provide responses to the commenter, and will include a summary of these comments and responses in the following draft MS4 Annual Report.

### 3.3 Measurable Goals and Program Assessment

Table 3.1 lists measurable goals and measures for identified Public Involvement and Participation BMPs. MS4 Annual Reports include these measures to detail the status of each measurable goal and BMP. Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

Summary of BMPs, Measurable Goals, and Measures for Public Involvement and Participation

Table 3.1

| Best Management Practice (BMP)  | Measurable Goals   | Measures   |
|---|--|--|
| <b>Provide and promote the opportunity to report and receive stormwater information</b> | 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 <a href="mailto:MS4@dep.nyc.gov">MS4@dep.nyc.gov</a>  |
| <b>Provide public opportunity to participate in SWMP implementation</b>                 | Seek public input on SWMP implementation and provide public access to Annual Reports   | <ul style="list-style-type: none"> <li>Date and location of draft Annual Report posted for public review and comment period</li> <li>Date and time of draft Annual Report stakeholder meeting and number of participants</li> <li>Summary of comments received on draft Annual Report and City responses</li> <li>List of involvement and participation activities (e.g., programs, events, key stakeholder meetings)</li> <li>Status and location of final Annual Report and the Plan</li> <li>List of planned participation and involvement programs/ activities to be undertaken in next reporting cycle</li> </ul> |



# Mapping



Dolphins in New York Harbor

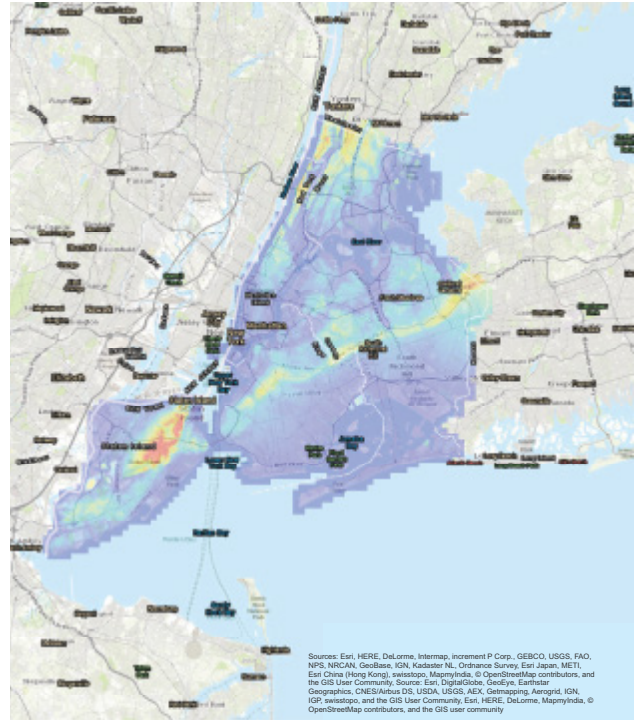


Under Part IV.C of the MS4 Permit, the City is required to maintain a Geographic Information Systems (GIS)-based map of the MS4 “urbanized area” and outfalls. This chapter describes the City’s Mapping Program that satisfies the following MS4 Permit requirements:

- Identify and map the MS4 area, MS4 outfalls, and other supplemental information such as zoning and land use, locations of facilities handling municipal waste, and locations of parks and open space within the MS4 area
- Update the MS4 Map 5 years from the effective date of the MS4 Permit.

This chapter details the City’s Mapping Program, for which DEP is the coordinating agency. Each agency, including DEP, is responsible for identifying its MS4 drainage areas and outfalls. DEP is responsible for compiling the MS4 Map based on information received from other City agencies regarding City-owned or -operated sites and infrastructure. An interactive version of this map is available at [www.nyc.gov/dep/ms4map](http://www.nyc.gov/dep/ms4map).

Digital Elevation Model of NYC



The MS4 Permit regulates drainage areas (collectively called the MS4 area) where one or more of the following statements apply:

- Stormwater drains to separate storm sewers owned or operated by the City that discharge to Surface Waters of the State through MS4 outfalls, or that connect to combined sewer overflow outfalls downstream of a CSO regulator (a device used in NYC’s combined sewers to control the diversion of sewage flow to the WRRF during dry and wet weather);
- Stormwater drains to high-level storm sewers and Bluebelts that ultimately discharge to Surface Waters of the State through MS4 outfalls; or
- Stormwater drains by overland flow from a City operation or facility directly to Surface Waters of the State.

An MS4 outfall is any point where a separate storm sewer system owned or operated by the City discharges to 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 an MS4 owned or operated by an entity other than the City are not considered MS4 outfalls.



## Types of Drainage Areas

### COVERED BY MS4 PERMIT

|                     |  |
|---------------------|--|
| City infrastructure | <b>Separate Storm Sewered Area</b><br>City separate storm sewer connected to CSO outfall downstream of regulator |
|                     | <b>Separate Storm Sewered Area</b><br>City separate storm sewer connected to MS4 outfall                         |
|                     | <b>High Level Storm Sewered Area</b><br>City high level storm sewer connected to MS4 outfall                     |
|                     | <b>City Direct Drainage Area</b><br>Overland flow from City property to surface water                            |

### NOT COVERED BY MS4 PERMIT

|                        |   |
|------------------------|---|
| City infrastructure    | <b>Combined Area</b><br>City combined sanitary and storm sewers connected to Wastewater Treatment Plant and CSO outfall upstream of regulator |
|                        | <b>Sanitary Area (No Storm Sewers)</b><br>City sanitary sewer connected to a Wastewater Treatment Plant                                       |
|                        | <b>Discrete Storm Sewered Area</b><br>City separate storm sewer connected to CSO outfall upstream of regulator                                |
| Private infrastructure | <b>Private Separate Storm Sewered Area</b><br>Private separate storm sewer connected to private outfall                                       |
|                        | <b>Private Direct Drainage Area</b><br>Overland flow from private property to surface water   |
|                        | <b>Unsewered Area</b><br>Private dry wells and septic systems   |

## 4.1 Related Programs

The City has many programs that document and map information relevant to NYC. Some of these programs were used and referenced in the City's efforts to develop the GIS-based map of MS4 outfalls and corresponding drainage areas. Various City agencies own and maintain these datasets. For informational purposes, a description and explanation of each dataset and how it supported the development of the MS4 Map is provided below. Additional datasets provided by the U.S. Geological Survey, Coastal and Marine Geology Program, and the New York State Digital Ortho-imagery Program were also used by City agencies to delineate drainage areas. As the datasets described below were not developed for MS4 Permit compliance, they may be amended or eliminated in the future, and the MS4 mapping process will adjust accordingly.

### Sewer Network Geodatabase

DEP developed a GIS-based Sewer Network Geodatabase to maintain and provide detailed information about DEP's water and sewer infrastructure, including pipes, catch basins, and outfalls. A component of the geodatabase is a geometric network that models the connectivity and flow directions of the sewer network. DEP uses this dataset to delineate drainage areas for each MS4 outfall under DEP's jurisdiction.

DEP regularly updates the Sewer Network Geodatabase as new infrastructure is built and inaccuracies in existing data are discovered and corrected. The GIS dataset represents the best information available, but should not be perceived as a real-time, accurate representation of field conditions. The information contained in GIS data is dynamic, changing over time as updates are received and processed. This dataset is maintained by DEP for internal use.

### Combined Sewer Overflow Delineation

DEP has conducted extensive analysis and modeling of the City's combined sewer system as part of an effort to reduce CSOs. DEP has delineated sub-catchments tributary to each CSO outfall. Prior to issuance of the MS4 Permit in 2015, DEP used these datasets, the best available data at the time, to create the Historical MS4 Map. These datasets are maintained by DEP for internal use.

## Shoreline Survey Program

The Shoreline Survey Program is an outfall reconnaissance inventory (ORI) that identifies and characterizes shoreline outfalls in NYC. Under this program, City agencies identify the attributes and locations of their outfalls, assess outfalls for evidence of dry weather discharges, and, if necessary, initiate illicit discharge field investigations, as described in Section 5.3. The ORI will address 100% of the outfalls within the MS4 area at least once every 10 years, with reasonable progress each year. The City must provide an updated list of outfalls to NYSDEC annually. This dataset is maintained by DEP and is publicly available through NYC Open Data.

## MapPLUTO

MapPLUTO merges Property Land Use Tax Lot Output (PLUTO) data with tax lot features from the NYC Department of Finance's Digital Tax Map. The MapPLUTO dataset contains more than seventy fields derived from data maintained by City agencies, including extensive land use and geographic data at the tax lot level. Agencies can use this dataset to identify the boundaries of agency facilities for drainage area delineations and to provide supplementary information such as land use and borough-block-lot (BBL) parcel numbers. This dataset is maintained by DCP and is publicly available through NYC Open Data.

## NYC Integrated Property Information System

The Integrated Property Information System (IPIS) is a real estate database of City-owned properties and private properties the City leases. Agencies can use this dataset to identify the boundaries of their owned or leased property for drainage area delineations. This dataset is maintained by DCAS and DOITT and is publicly available through NYC Open Data.

## NYC Owned and Leased Properties

City Owned and Leased Properties (COLP) is a comprehensive list of uses on City-owned and leased properties that includes geographic information as well as other related information. This dataset is updated biennially. COLP is produced from data in the IPIS, described above. As with IPIS, agencies can use COLP to identify the boundaries of their owned or leased properties for drainage area delineations. This dataset is maintained by DCAS and DCP and is publicly available through NYC Open Data.

## NYC Planimetric Database

Planimetric data capture geographic features from aerial photography to map in plan view. Example geographic features found in planimetric data include curbs, elevations, hydrography, open spaces, parking lots, and sidewalks, among others. Often referred to as planimetric features or simply planimetrics, these geographic features, in total, can provide context and location information for a specific area. The planimetric dataset can be used to aid in the estimation of drainage areas and to geo-reference paper maps and drawings. Geo-referencing is a process by which an image is referenced to a place in geographic space using common features from aerial imagery, such as DCP's MapPLUTO, other available data such as planimetric data, building footprints, or known coordinates. This dataset is maintained by DOITT and is publicly available through NYC Open Data.

## NYC Building Footprints

The NYC Building Footprint dataset contains all buildings with well-defined walls and roofs that are greater than 400 square feet in area and taller than 12 feet. Agencies can use this dataset to geo-reference site paper maps and drawings. This dataset is maintained by DOITT and is publicly available through NYC Open Data.

## Zoning

This dataset comprises six classes of zoning features: zoning districts, special purpose districts, special purpose district sub-districts, limited height districts, commercial overlay districts, and zoning map amendments. The City can use this dataset to satisfy the MS4 Permit requirement to describe zoning districts and related land uses within the MS4 area. This dataset is maintained by DCP and is publicly available through NYC Open Data.

## Contours

This dataset consists of a basemap layer containing citywide 2-foot contour lines. Contour lines show the topography of an area by joining points of equal elevation above a given reference point, such as sea level. Agencies can use this dataset to delineate drainage areas based on topography. This dataset is maintained by DOITT and is publicly available through NYC Open Data.

## NYC 1-foot Digital Elevation Model (DEM)

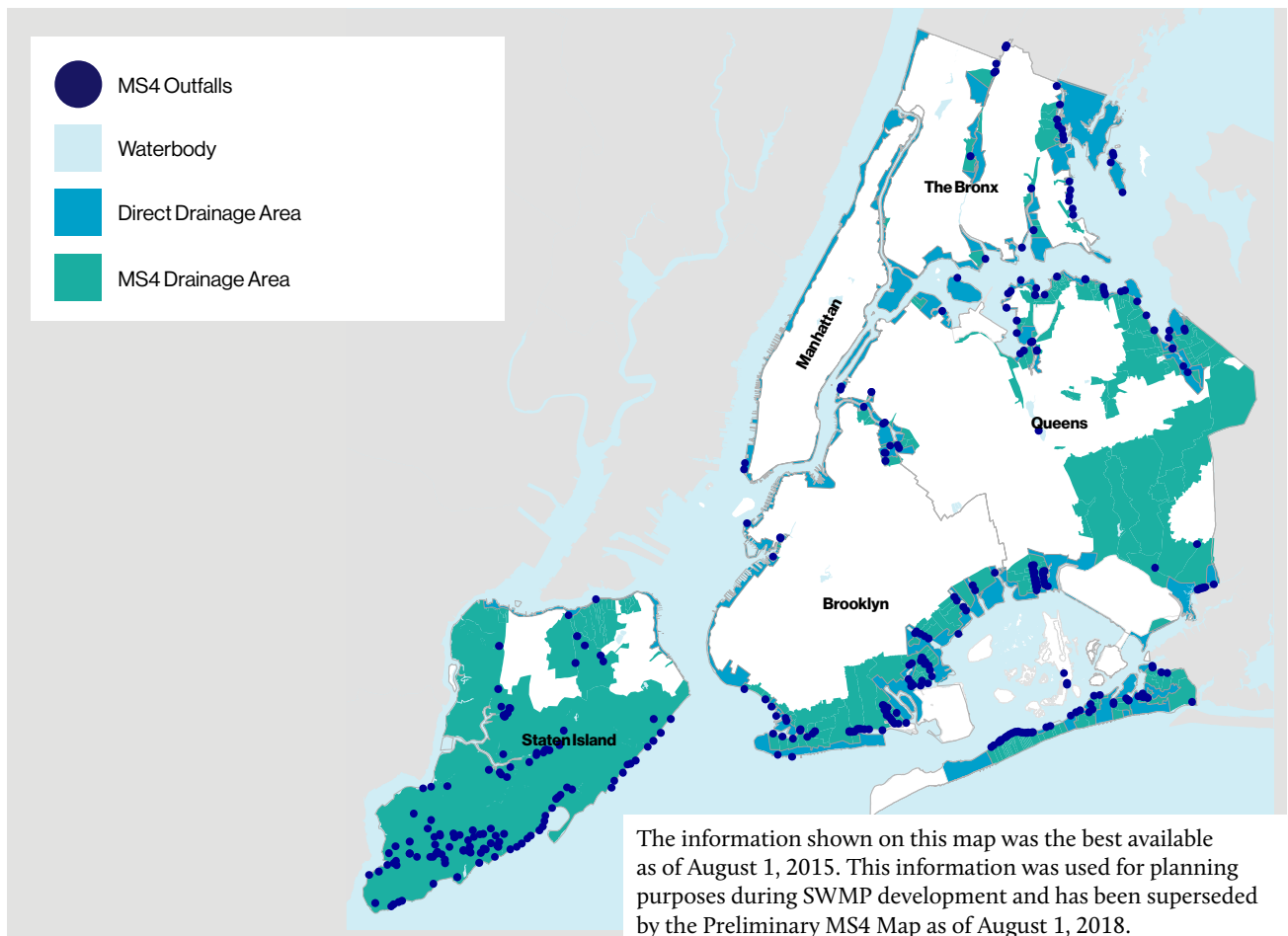
The NYC DEM is derived from Light Detection and Ranging (LiDAR) data collected in the spring of 2010. This DEM, created by the City of New York and University of Vermont Spatial Analysis Laboratory, models the elevation of the ground surface, and does not include aboveground features such as trees and buildings. Agencies can use this dataset to delineate drainage areas using software such as ESRI® ArcGIS. This dataset was created by DEP and DOITT and is publicly available through NYC Open Data.

## 4.2 Historical MS4 Map

DEP created the Historical MS4 Map prior issuance of the MS4 permit in 2015. To create this map, DEP used the CSO outfall drainage area delineation, as described in Section 4.1, and supplemented it with additional information about DEP's existing sewer system, planned infrastructure, and land use data, and information about state and federally owned land such as open space along the waterfront.

Unless this additional information indicated otherwise, DEP identified areas not draining to a CSO outfall as MS4 in the Historical MS4 Map. While the Historical MS4 Map was unrefined and contained some inaccuracies, it 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.

### Historical MS4 Map





## 4.3 2018 “Preliminary” MS4 Map and Associated Information

The Preliminary MS4 Map developed under the 2015 MS4 permit represented the MS4 area and outfalls known by the City at the time of submission of the SWMP Plan to NYSDEC on August 1, 2018. The map also included supplemental information available at the time of submission, as required by Part IV.C of the MS4 Permit. The Preliminary MS4 Map was available to the public in an interactive format on DEP’s website and included:

- MS4 drainage areas and outfalls
- Borough, Block, and Lot (BBL) information
- Zoning districts and related land uses
- Estimates of impervious surface coverage in the MS4 area
- Treatment, storage, and disposal facilities (TSDFs) for municipal solid waste (MSW)
- State Pollutant Discharge Elimination System (SPDES) Permits
- Major structural controls for stormwater discharge

## 4.4 2020 MS4 Map and Associated Information

On August 1, 2020, the City timely submitted to NYSDEC the final MS4 Map required by the 2015 MS4 Permit along with supporting documentation, based on the best available information. The MS4 Map is available to the public in an interactive format at [nyc.gov/dep/ms4map](https://nyc.gov/dep/ms4map). Data contained in this map are available for download at <https://data.cityofnewyork.us/>.

The City posts the MS4 Map online in a format that enables the public to:

- Explore the MS4 drainage areas and MS4 outfalls
- Access attribute tables to view supplemental information
- Download datasets through NYC Open Data

The information that is provided in the MS4 Map and supporting documentation includes:

### MS4 Drainage Areas and Outfalls

The MS4 Map includes polygons representing areas known to drain to surface waters of the State through MS4 outfalls or by overland flow from a City operation or facility. The MS4 Map also includes known stormwater outfalls owned by the City as a point dataset.

### Borough, Block, and Lot (BBL)

The MS4 Map includes BBL data within the MS4 area, as provided by MapPLUTO, described in Section 4.1.

### Zoning Districts and Related Land Uses

The MS4 Map includes publicly available data on zoning and land use, as provided by MapPLUTO. NYC is divided into three broad zoning districts: Residence (R), Commercial (C), and Manufacturing (M).<sup>10</sup> These three districts are further divided into a range of lower-, medium- and higher- density residence, commercial and manufacturing districts. Additionally, use groups denote the permitted uses within each zoning district. Table 4.1 summarizes the most prevalent land uses in each zoning district within the MS4 area. As a whole, “open space & outdoor recreation” is the most prevalent land use in the MS4 area (30%), followed by “one- & two-family residential” (27%), “right-of-way” (16%), “public facilities & institutions” (7%), “vacant land” (5%), and “transportation & utility” (5%).

<sup>10</sup> <https://www1.nyc.gov/site/planning/zoning/about-zoning.page>

## Estimates of Impervious Surface Coverage in the MS4 Area

Using the 2020 MS4 drainage area information and impervious surface information from DEP's 2020 Citywide Parcel-Based Impervious Area GIS Study,<sup>11</sup> the City has estimated the MS4 area to be 49.5% impervious, 4.1% semi-pervious, and 45.0% pervious. The remaining 1.4% of the MS4 area is classified as open water. To determine the impervious surface coverage in NYC, the City used four core datasets – Ortho Imagery (2018), LiDAR (2017), Planimetrics (2016), and MapPLUTO (2018). Using remote sensing and a computer model, DEP identified nineteen land cover classes citywide (water, roof, asphalt, concrete, rubber, metal, wood, brick paver, synthetic turf, tree, bush, grass, gravel, sand, bare soil, pool, rock, solar panel, open water), which were then assigned a level of imperviousness: impervious, semi-pervious, or pervious. To estimate impervious surface coverage in the MS4 area, the City clipped these citywide data to the MS4 area and then calculated the total area for each type within the MS4 area.

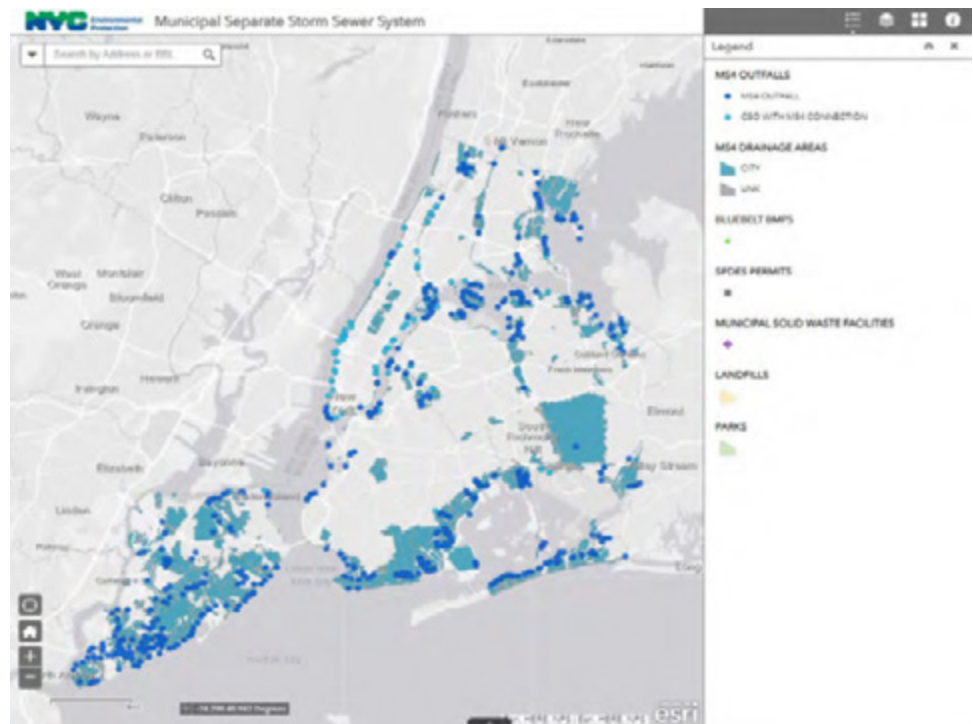
11 <https://data.cityofnewyork.us/City-Government/DEP-s-Citywide-Parcel-Based-Impervious-Area-GIS-St/uex9-rfq8>

## Treatment, Storage, and Disposal Facilities (TSDF) for Municipal Solid Waste (MSW)

The MS4 Map includes locations of City facilities and operations within the MS4 area that treat, store, or dispose of MSW. For the purposes of the MS4 Map, these are municipally owned or operated facilities with potential exposure to stormwater that handle everyday items that people use and discard. MSW includes a vast range of items, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries.

NYC has several types of facilities that currently handle MSW: waste transfer stations, composting facilities, and household special waste drop-off sites. NYC has no operating disposal facilities such as landfills or incinerators. However, the City does have MSW-related regulatory responsibilities at seven closed landfills.

Interface of the Interactive MS4 Map for NYC



Summary of Prevalent Zoning Districts Present in the MS4 Area and Associated Land Use

Table 4.1

| Zoning Districts     | Land Use                   |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             |              |
|----------------------|----------------------------|--------------------------------|---------------------------------|--|-------------------------------|----------------------------|--------------------------|----------------------------------|---------------------------------|--------------------|-------------|--------------|
|                      | One & Two Family Buildings | Multi-Family Walk-Up Buildings | Multi-Family Elevator Buildings | Mixed Residential & Commercial Buildings | Commercial & Office Buildings | Industrial & Manufacturing | Transportation & Utility | Public Facilities & Institutions | Open Space & Outdoor Recreation | Parking Facilities | Vacant Land | Right-of-Way |
| <b>Residence</b>     |                            |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             |              |
| R1                   | ✓                          |                                |                                 |  |                               |                            |                          | ✓                                |                                 |                    | ✓           |              |
| R2                   | ✓                          |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             |              |
| R3                   | ✓                          |                                |                                 |  |                               |                            |                          | ✓                                | ✓                               |                    | ✓           |              |
| R4                   | ✓                          | ✓                              | ✓                               |  |                               |                            |                          | ✓                                | ✓                               |                    | ✓           |              |
| R5                   | ✓                          | ✓                              | ✓                               |  |                               |                            |                          | ✓                                |                                 |                    | ✓           |              |
| R6                   | ✓                          | ✓                              | ✓                               | ✓  | ✓                             |                            |                          | ✓                                | ✓                               |                    | ✓           |              |
| R7                   | ✓                          | ✓                              | ✓                               | ✓  | ✓                             |                            |                          | ✓                                |                                 |                    | ✓           |              |
| <b>Commercial</b>    |                            |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             |              |
| C3                   | ✓                          |                                |                                 |  |                               |                            |                          |                                  | ✓                               |                    | ✓           |              |
| C4                   |                            |                                | ✓                               |  | ✓                             |                            |                          | ✓                                | ✓                               | ✓                  | ✓           |              |
| C6                   |                            |                                |                                 | ✓  | ✓                             |                            |                          | ✓                                |                                 | ✓                  | ✓           |              |
| C8                   |                            |                                |                                 |  | ✓                             |                            | ✓                        | ✓                                |                                 |                    |             |              |
| <b>Manufacturing</b> |                            |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             |              |
| M1                   |                            |                                |                                 |  |                               | ✓                          | ✓                        | ✓                                |                                 |                    | ✓           |              |
| M2                   |                            |                                |                                 |  | ✓                             | ✓                          | ✓                        | ✓                                |                                 |                    | ✓           |              |
| M3                   |                            |                                |                                 |  |                               | ✓                          | ✓                        |                                  |                                 |                    | ✓           |              |
| <b>Other</b>         |                            |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             |              |
| Park                 |                            |                                |                                 |  |                               |                            |                          |                                  | ✓                               |                    |             |              |
| ROW                  |                            |                                |                                 |  |                               |                            |                          |                                  |                                 |                    |             | ✓            |

Table 4.2 summarizes activities at current MSW TSDFs within the MS4 area, and closed municipal landfills where the City retains responsibility for post-closure landfill requirements. Several facilities – Fresh Kills Landfill, Hamilton Avenue Marine Transfer Station, Southwest Brooklyn Marine Transfer Station, East 91st Street Marine Transfer Station, North Shore Marine Transfer

Station, and Staten Island Transfer Station – have other SPDES permits that address stormwater discharges and are, therefore, not subject to the MS4 Permit (per the exemptions filed pursuant to Part I.D of the NYC MS4 permit). They are, however, included here for informational purposes.



## TSDFs for MSW and Associated Activities in the MS4 Area

Table 4.2

| Name   | Borough       | Agency   | Type                                   | Activities   |
|--|---------------|----------|--|--|
| <b>Landfills</b>   |               |          |  |  |
| Fresh Kills Landfill   | Staten Island | DSNY/DPR | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff              |
| Pennsylvania Avenue Landfill                                   | Brooklyn      | DEP      | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff              |
| Fountain Avenue Landfill                                       | Brooklyn      | DEP      | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff              |
| Pelham Bay Landfill  | Bronx         | DPR      | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff              |
| Brookfield Avenue Landfill                                     | Staten Island | DPR      | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff              |
| Ferry Point Landfill   | Bronx         | DPR      | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff; Golf Course |
| Edgemere Landfill  | Queens        | DSNY/DPR | Closed Landfill                        | Landscape/Grounds Care; Landfill Runoff              |
| <b>Waste Transfer Stations</b>                                 |               |          |  |  |
| Hamilton Avenue Marine Transfer Station                        | Brooklyn      | DSNY     | Waste Transfer Station                 | Waste Management; Waste Transfer Station             |
| Southwest Brooklyn Marine Transfer Station                     | Brooklyn      | DSNY     | Waste Transfer Station                 | Waste Management; Waste Transfer Station             |
| East 91st Street Marine Transfer Station                       | Manhattan     | DSNY     | Waste Transfer Station                 | Waste Management; Waste Transfer Station             |
| North Shore Marine Transfer Station                            | Queens        | DSNY     | Waste Transfer Station                 | Waste Management; Waste Transfer Station             |
| Staten Island Transfer Station                                 | Staten Island | DSNY     | Waste Transfer Station                 | Waste Management; Waste Transfer Station             |
| West 59th St Marine Transfer Station                           | Manhattan     | DSNY     | Waste Transfer Station/ Recyclables    | Waste Management; Waste Transfer Station             |
| <b>Compost Facilities</b>                                      |               |          |  |  |
| Staten Island Composting Facility                              | Staten Island | DSNY     | Compost Facility                       | Material Stockpiles                                  |
| Soundview Park Composting Facility                             | Bronx         | DSNY     | Compost Facility                       | Material Stockpiles                                  |
| Rikers Island Composting Facility                              | Bronx         | DSNY     | In-vessel Compost Facility (indoors)   | Material Stockpiles                                  |
| Gowanus Community Composting Facility (2 Second Avenue)        | Brooklyn      | DSNY     | Compost Facility (under cover)         | Material Stockpiles                                  |
| <b>Household Special Waste Drop-Off Sites</b>                  |               |          |  |  |
| Bronx Sanitation Household Special Waste Drop-Off Site         | Bronx         | DSNY     | Household Special Waste Drop-Off Sites | Waste Management; Waste Transfer Station             |
| Brooklyn Sanitation Household Special Waste Drop-Off Site      | Brooklyn      | DSNY     | Household Special Waste Drop-Off Sites | Waste Management; Waste Transfer Station             |
| Queens Sanitation Household Special Waste Drop-Off Site        | Queens        | DSNY     | Household Special Waste Drop-Off Sites | Waste Management; Waste Transfer Station             |
| Staten Island Sanitation Household Special Waste Drop-Off Site | Staten Island | DSNY     | Household Special Waste Drop-Off Sites | Waste Management; Waste Transfer Station             |

The City has several other closed landfill sites in the MS4 area (in addition to those listed in Table 4.2) that previously received MSW as fill material pursuant to the City's former Land Reclamation Program. That Program began in the 1930s and continued until 2001, when the last City landfill closed. These other closed landfills do not have post-closure landfill requirements and are generally under the jurisdiction of NYC Parks or the National Parks Service Gateway Recreation Area. Where geographic information was available for these sites, the City included them on the MS4 map, as points in the MSW layer.

### State Pollutant Discharge Elimination System (SPDES) Permits

The NYSDEC SPDES Permit Program is designed to eliminate or prevent the pollution of waterbodies in New York State. Under this program, certain private or public facilities, operations, or activities must obtain an individual SPDES permit before discharging any pollutant to waters of the State. For more information on the NYSDEC SPDES Permit Program, refer to <https://www.dec.ny.gov/permits/6054.html>. The MS4 Map includes data on SPDES-permitted discharges to the MS4, as provided by NYSDEC and City agencies.

### Major Structural Controls for Stormwater Discharge

Major structural controls for stormwater discharge (or major structural controls) are City-owned or operated controls located within the MS4 area that are designed to retain, detain, or infiltrate stormwater and that, if they were to fail, would potentially cause damage or harm to adjacent or downstream areas. The City has identified the controls from the DEP Bluebelt Program as its only major structural controls. The DEP Bluebelt Program restores, preserves, and enhances natural drainage corridors through a series of structural controls such as constructed wetlands, sand filters, and detention basins. The MS4 Map includes locations of these major structural controls draining to the MS4, known as of August 2020.

## 4.5 MS4 Map Update Process

The City timely submitted to NYSDEC on August 1, 2020, the last MS4 Map required by the 2015 permit. In compliance with Part IV.C of the 2022 MS4 Permit, DEP will provide to NYSDEC a geodatabase containing the MS4 Map with all available updates five years from the effective date of the 2022 permit (due date August 1, 2027). The updated map will include the most current approximate boundaries of the urbanized area, any additions or deletions to the MS4 drainage areas, and any newly constructed or discovered MS4 outfalls. Additionally, updates will include any changes to land use within the urbanized area, as provided in the MapPLUTO dataset.

## 4.6 Measurable Goals and Program Assessment

Table 4.3 lists measurable goals and measures for identified mapping best management practices (BMPs). Annual Reports include these measures to detail the status of each measurable goal and BMP. Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

Summary of BMPs, Measurable Goals, and Measures for Mapping

Table 4.3

| Best Management Practice (BMP) | Measurable Goals   | Measures                            |
|--------------------------------|--|-------------------------------------|
| <b>Map the MS4 Area</b>        | Map in GIS format, MS4 outfalls, and drainage areas (current Map as of August 1, 2020) | Status and location of the MS4 Map  |
|                                |  | Number of known MS4 outfalls mapped |
|                                | Update MS4 Map 5 years from the effective date of the MS4 Permit                       | Date of latest updated MS4 Map      |

# Illicit Discharge Detection and Elimination (IDDE)





Gowanus Canal



Under Part IV.D of the MS4 Permit, the City must implement and enforce a program to detect and eliminate illicit discharges into the MS4. Illicit discharges are non-stormwater, unauthorized discharges to the MS4. This chapter describes the City's Illicit Discharge Detection and Elimination (IDDE) Program to satisfy the following MS4 Permit requirements:

- Develop an IDDE Plan for NYSDEC review and approval that clearly identifies the responsibilities that DEP will implement and the IDDE protocols and actions to be taken by the other City agencies covered under this Permit. The Plan must delineate written procedures for preventing, detecting, investigating and eliminating illicit discharges.
- Provide an updated list of IDDE points of contact for each agency
- Conduct an outfall reconnaissance inventory (ORI)
  - » Each City agency will be responsible for providing the approximate location and coordinates, pipe size and material of which it is constructed, receiving water and the discharge type for each of its outfalls.
  - » ORI must address 100% of the outfalls within the MS4 area at least once every 10 years, with reasonable progress each year.
  - » Submit an updated outfall list to NYSDEC every year in spreadsheet form that includes all MS4 outfalls
- Maintain regulations against illicit discharges to the MS4 and continue to implement appropriate enforcement to prevent illicit discharges and illegal connections to the MS4.
- Upon identifying an illicit discharge, provide to NYSDEC a Phase I letter including a schedule for an investigation to determine the source of the discharge and then abatement of the discharge; before the end of the schedule in Phase I, notify NYSDEC (Phase II Letter) that the illegal connection/illicit discharge has been resolved.

To provide the public with access to water quality data and information on IDDE investigations, information on how to report potential illicit discharges, and information on how to receive notifications of illicit discharges, the City:

- Posts online the Sentinel Monitoring Program quarterly data and the annual Sentinel Monitoring Reports which summarize IDDE field investigations.
- Provides guidance on how to report potential illicit discharges through 311 (see section 2.5 for more information on 311).
- Notifies elected officials, community boards, and community leaders about confirmed illicit discharge sources, when applicable.

- Perform a sentinel monitoring program
  - » Sample quarterly during dry weather conditions for fecal coliform
  - » Conduct mini-shoreline investigations of waterbodies found to have fecal coliform levels over 200 colonies/100 (milliliters) mL
  - » Report annually on the locations and ownership of illicit discharges to the MS4 discovered through the sentinel monitoring and shoreline survey programs and develop and implement a schedule to eliminate those discharges
- Educate public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste
- Implement procedures to prevent, contain, and respond to spills that may discharge to the MS4
- Describe controls to limit infiltration of seepage from municipal sanitary sewers to the MS4
- Train staff who implement IDDE tasks.

Chapter 1: Legal Authority and Program Administration discusses the City's legal authority for the IDDE Program and details the City's regulatory mechanisms to prohibit illicit discharges into the City's sewer system. Appendix 1.1: Enforcement Response Plan (ERP) describes procedures for investigating, documenting, and enforcing against illicit discharges pursuant to Part III.C of the MS4 Permit.

All City agencies that own or operate facilities within the MS4 area conduct IDDE activities on their properties, while DEP conducts IDDE activities in the right of way, at private properties within the City's legal authority, and at its own properties.

## 5.1 Non-Stormwater Discharges

Non-stormwater discharges into the MS4 are generally not authorized and are considered illicit. However, certain non-stormwater discharges into the MS4 are allowed, including those from firefighting activities, and discharges determined by DEP not to be significant contributors of pollutants to surface waters of the State. Pursuant to 15 RCNY Section 19-02(j), DEP determines, on a case-by-case basis, whether a non-stormwater discharge is a significant contributor of pollutants, and the discharge must be approved by the DEP Commissioner. Discharges DEP considers to be significant sources of pollutants and any other non-stormwater discharges into the MS4 such as sanitary connections to storm sewers, illegal dumping, and spills that enter the sewer are considered illicit. To obtain DEP approval to discharge non-stormwater into the MS4, email DEP at [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov) with the subject line Non-stormwater Discharge Inquiry.

## 5.2 Illicit Discharge Detection

### Shoreline Survey

The MS4 Permit requires the City to conduct an outfall reconnaissance inventory (ORI). Each City agency covered under the permit will be responsible for providing the approximate location and coordinates, pipe size and material of which it is constructed, receiving water and the discharge type (e.g., SPDES, MS4, direct discharge, storm drain, highway drain, WRRF storm drain, abandoned, etc.) for each of its outfalls. The ORI, as conducted per the WRRF SPDES permits, will address 100% of the outfalls within the urbanized area at least once every 10 years, with reasonable progress each year.<sup>12</sup>

During the Shoreline Survey, agencies will identify the attributes and locations of outfalls, assess outfalls for evidence of dry weather discharges, and, if necessary, initiate illicit discharge field investigations, as described in Section 5.3. The City will submit an updated outfall list to NYSDEC every year.

### The Sentinel Monitoring Program

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

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<sup>12</sup> DEP's 14 WRRFs' SPDES Permits require DEP to complete a Shoreline Survey of at least 50 percent of its shoreline every five years.



Illegal dumping occurs when material, including but not limited to bags, litter, oil, unused concrete, concrete wash water, construction debris, and appliances, is dumped onto surface drainage ways, open channels, storm inlets/catch basins, or storm manholes on public or private property. It is illegal to dump, deposit, or otherwise dispose of any dirt, sand, gravel, clay, loam, stone, rocks, rubble, building rubbish, sawdust, shavings, trade or household waste, ashes, manure, garbage, rubbish, or debris of any sort being transported in a dump truck or other vehicle in or upon any street, lot, park, public place, or other area whether publicly or privately owned. In addition, no person may allow anyone under his/her control (agent or employee) to engage in illegal dumping. Penalties for this offense include a fine and vehicle impoundment.



set list of Global Positioning System (GPS) coordinates, DEP goes to sentinel stations quarterly, collects water for samples, and analyzes the samples for pathogens. To ensure data integrity, DEP conducts sampling after a dry weather period of 48 hours and during various tidal cycles and seasons.

The current water quality standard set by NYSDEC is 200 fecal coliform/100 mL. If a station's sampling result exceeds this threshold, then DEP prioritizes its adjacent shoreline for a mini-shoreline investigation, which includes field investigations and surveillance to identify a potential source of the contamination. In addition, DEP collects evidence of other types of dry weather discharge, if observed.

The Integrated Sentinel Monitoring Report, which DEP submits to NYSDEC annually by June 30, includes information on waterbodies with fecal coliform levels over 200 colonies/100 mL and unauthorized non-stormwater discharges to the MS4. This report satisfies the IDDE annual report deliverable required in Part IV.O, Table 2, of the MS4 Permit.

### Harbor Survey Program

The Harbor Survey Program samples ambient waterbody stations to assess the health of waterbodies throughout NYC. DEP coordinates the review and analysis of these data among the various monitoring programs, and the data may be used to initiate a mini-shoreline survey. Chapter 10: Monitoring and Assessment of Controls, Section 10.1, describes the City's other existing water quality monitoring programs.

### 311

311 provides a mechanism for the public to report illicit discharges to the City. Waterway complaints, illegal dumping, and oil spills are examples of reports the public can make through 311. The City responds to 311 reports based on the type of complaint. For more information on 311, refer to Section 2.5.

## 5.3 Illicit Discharge Trackdown, Notification, and Elimination

The City conducts an IDDE investigation if a potential illicit discharge is identified through one of three events:

- An outfall discharging dry weather flow is discovered by an agency during its Shoreline Survey.
- A prioritized mini-shoreline investigation is triggered by the Sentinel Monitoring Program.
- A complaint of a potential illicit discharge is received from the public.

When one of these events triggers an IDDE investigation, the responsible City agency conducts appropriate in-sewer and/or aboveground inspections to identify the source of any dry weather discharge entering the City's sewer system, and takes abatement actions with respect to any confirmed illicit discharge. Figure 5.1 summarizes the processes of the DEP programs to identify and eliminate illicit discharges.

### Source Trackdown

City agency Shoreline Survey crews use standard operating procedures (SOPs) for illicit discharge investigations. These SOPs include sewer map reviews, field inspections, sampling procedures, and dye testing procedures.

In response to public reports of potential illicit discharges, DEP responders look at the location for evidence consistent with the complaint description (e.g., oil, paint, sewage). DEP's field investigation includes looking for any type of illicit discharge, attempting to identify the source, and initiating a trackdown, if necessary.

### Notification and Elimination

Within 30 days of the discovery of an illicit discharge, the responsible City agency notifies NYSDEC and provides a written schedule to conduct the necessary investigative work to determine the source of the discharge and to eliminate/abate the discharge (Phase I letter). When the discharge has been abated/resolved, the responsible City agency confirms the abatement in writing to NYSDEC (Phase II letter). This procedure complies with Part IV.D.5 of the MS4 Permit.

In addition, the City notifies NYSDEC, DOHMH, and adjoining municipalities following confirmation of a discharge and may notify the public directly through the NY-Alert system at the NYSDEC website when waterways are significantly impacted by untreated or partially treated sewage discharges in their area.

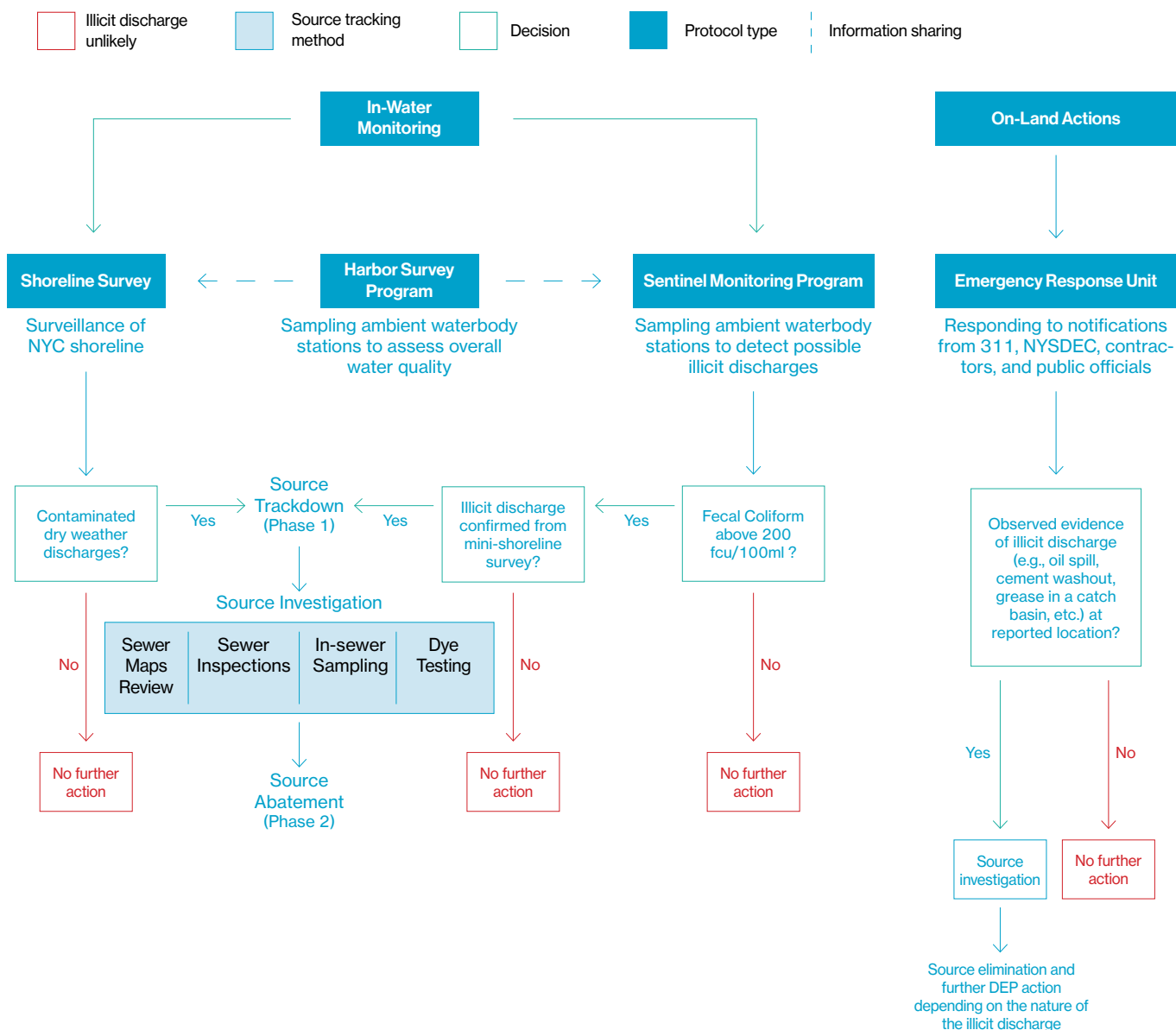
In further coordination with NYSDEC, the City reports to NYSDEC dry weather discharges it discovers that fall under the State's jurisdiction (e.g., from a private outfall). The City reports illicit discharges that are not sewage-related (e.g., chemicals, gas, cement) to NYSDEC through the NYS Spill Hotline and/or email correspondence.

## Enforcement

For 311 complaints, DEP typically issues a Commissioner's Order after identifying the source of the illicit discharge, requiring the responsible party to cease the discharge and begin abatement. If the responsible party does not make a concerted effort to comply with the Commissioner's Order, DEP then issues a summons (formerly known as a notice of violation or NOV) for failure to comply. DSNY may also impose penalties for the unlawful discharge of a noxious liquid (which can include concrete wash water) under the Sanitation Code. Refer to Appendix 1.1: Enforcement Response Plan for details on enforcement actions.

## Main DEP IDDE Programs

Figure 5.1



## 5.4 Spill Prevention and Citywide Response

In addition to outfall reconnaissance, water quality sampling and source trackdowns, there are citywide spill prevention and response programs involving various agencies with different levels of responsibilities.

### Spill Prevention

The NYC Community Right-to-Know Law authorizes DEP DERTA to regulate the storage, use, and handling of hazardous substances. As part of the enforcement of the law, DERTA oversees the use and storage of hazardous substances that pose a threat to public health and the environment in NYC. This program manages the reporting and storage of hazardous substances by requiring businesses and facilities throughout the five boroughs to



DEP staff begins sewer investigation



DEP staff conducts in-sewer investigation



Shoreline sampling





#### Field sampling

file reports annually detailing the quantity, location, and chemical nature of hazardous substances stored within their facilities.

After Hurricane Sandy, DERTA prepared and distributed brochures to facilities in storm-prone locations. The brochure provides recommendations for proper storage and handling of their chemicals to prevent spillage during adverse weather conditions.

Additionally, through the PP/GH Program, City agencies implement stormwater control measures (SCMs) designed to prevent and contain spills at municipal facilities/operations. For further details, refer to Chapter 7: Pollution Prevention/ Good Housekeeping.

### Spill Containment and Response

The DEP Industrial Pre-Treatment Program regulates discharges of specific pollutants from certain facilities into the City's sewer system. In the MS4 area, DEP inspects regulated facilities to evaluate industrial processes; to ensure compliance with Federal and City wastewater regulations; and to assess outdoor storage, handling, and transfer areas. DEP assesses these facilities for proper containment of substances to ensure the prevention of future spills.

The City responds to spills in a number of ways, including taking and ordering actions to:

- Minimize or mitigate the release of substances discharged into the City's sewer system.
- Clean up or remove released substances from the environment.
- Implement security measures, when appropriate, to protect the public.

DEP's Bureau of Wastewater Treatment (BWT) has an Industrial Waste Emergency Response Unit (ERU) that responds to spills of all types that enter the sewer system. Spills of hazardous substances are covered under the NYC Hazardous Substances Emergency Response Law (also known as the Spill Bill), which authorizes DERTA to respond to chemical release emergencies. In addition, under the Citywide Incident Management System (CIMS), DERTA remediates conditions caused by releases or threatened releases of hazardous substances into the environment.

FDNY also responds to spills; its Hazardous Materials Unit responds to hazardous materials incidents throughout NYC, and its Fuel Unit responds to FDNY-related fuel spills. Other agencies, such as DSNY, may also assist in spill response when requested to do so by emergency response personnel.

## 5.5 Sanitary Pipe Seepage Controls

The City utilizes administrative and operational controls to limit infiltration of seepage from municipal sanitary sewers to the MS4. DEP is responsible for maintaining most existing City sewers to keep them operational and in structurally sound condition. DEP's Collections System Investigation (CSI) Section (formerly Capacity Management Operation and Maintenance or CMOM) investigates complaints and responds to inquiries regarding sewer conditions throughout NYC. Some of these complaints are related to cracks, fractures, open joints, deformation, collapses, missing bricks, and erosion.

Additionally, DEP investigates sewer structural conditions for any damage to the sewer walls through closed circuit television (CCTV) inspections for smaller pipes, and walkthrough inspections by specially trained personnel for large trunk lines. The results of these inspections are compiled in a report based on the Pipe Assessment Certification Program (PACP), an industry standard grading system for sewer defects. DEP uses a combination of the PACP grading system and other criteria to determine sewer condition and need for rehabilitation. Various methods, such as lining, guniting, and replacement are used to restore pipes to eliminate seepage.



DEP DERTA responders

## 5.6 Public Education and Participation

The City conducts robust public education, outreach, and participation programs associated with stormwater management, as described in Chapters 2 and 3 of this Plan. This section provides a summary of education, outreach, and participation measures targeted at IDDE.

### General Public

- The DEP website provides information on stormwater and the City's sewer system.
- DSNY holds SAFE disposal events throughout the year in all five boroughs to help residents dispose of harmful household products safely.
- 311 provides information and assistance and allows residents to report water quality issues including dry weather discharges, illegal dumping, and spills (refer to Chapter 2: Public Education and Outreach, Section 2.5).

### Industrial and Commercial Businesses

- The DEP Trash it. Don't Flush It Program (formerly known as Cease the Grease Program) distributes information to food service establishments (FSEs) throughout NYC about proper grease disposal and the sewer system.
- DEP reaches out to various businesses through meetings, door-to-door visits, workshops, mailers, and/or on-site visits.
- DEP works with its primary partners (and their members) including Local Development Corporations, Business Improvement Districts (BIDs), Chambers of Commerce, Merchant Associations, and trade associations to distribute materials that include information on proper waste disposal.
- DEP provides automotive associations with information on proper waste disposal, as well as vehicle washing and refueling.



DEP Cease the Grease program



## Oil spill in Fresh Creek



Septic systems treat wastewater—from bathrooms, kitchens, and washing machines—from buildings not served by either a combined or a separate sanitary sewer. The areas of NYC without sewers and that must instead rely on septic systems are mostly located in Queens and Staten Island.

Septic systems are underground and typically consist of a septic tank and a drainfield or soil absorption field. Functioning septic systems treat wastewater through natural processes and are not a threat to water quality. However, because household wastewater contains pathogens, nutrients such as phosphorus and nitrogen, and some toxic chemicals, failing septic systems that allow inadequately treated wastewater to leak through the ground or onto the surface can lead to increased levels of impairment in a waterbody. Septic waste from failing septic systems entering storm sewers is an example of an illicit discharge.

The regulation and oversight of septic systems in NYC are shared among DOB, DOHMH, and NYSDEC, depending on the capacity of the septic system. All commercial septic systems and residential systems with a capacity greater

than 1,000 gallons of wastewater per day require permits from NYSDEC. However, most residential septic systems are below the 1,000-gallon threshold and are regulated by DOB and, in some instances, DOHMH.

Under 1 RCNY §8001-01, DOB regulates the design and installation of new septic systems that receive less than 1,000 gallons of sewage per day, which does not include industrial wastes, and the maintenance of existing septic systems up to that flow limit. Under Health Code § 143.11, Community private sewage disposal systems, DOHMH permits septic systems for multiple dwellings of 15 units or greater.

Based on SWMP public comments, 311 added a service for the public to report failing septic systems through the Septic or Cesspool Complaint (<https://portal.311.nyc.gov/article/?kanumber=KA-01916>). Through 311, DOB responds to public complaints about failing septic systems. If the failing septic system results in standing sewage or a health nuisance, DOHMH can issue a Health Order for the owner to abate the problem. If the failing septic system discharges into a catch basin, DEP can issue a summons.



## 5.7 Staff Training

City agencies train all operational staff on identifying and preventing illicit discharges, spills, and illegal dumping during routine work activities at municipal facilities/operations. This training is done in coordination with the PP/GH Program. Refer to Chapter 7: Pollution Prevention/Good Housekeeping for details on the PP/GH Program.

Pursuant to requirements in Part IV.D.12 of the MS4 Permit, City agency staff implementing the IDDE Program, including Shoreline Survey crews, receive training on illicit discharge identification, proper procedures for reporting and responding, and applicable health and safety guidelines.

DEP Shoreline Survey crew members are trained in accordance with DEP's SOPs. New employees for the DEP ERU that respond to spills and 311 complaints are trained by experienced staff in the field. Each agency documents and maintains records of its staff trained and the training provided.

## 5.8 Measurable Goals and Program Assessment

Table 5.1 lists measurable goals and measures for identified IDDE best management practices (BMPs). MS4 Annual Reports include these measures to detail the status of each measurable goal and BMP.

Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

### Summary of BMPs, Measurable Goals, and Measures for the IDDE Program

Table 5.1

| Best Management Practice (BMP)                                   | Measurable Goals  | Measures   |
|--|---|--|
| <b>Detect and eliminate illicit discharges</b>                   | Detect and eliminate illicit discharges including illegal dumping   | Number of illicit discharges detected  |
|  |   | Number of illicit discharges eliminated  |
|  |   | Number of and type of enforcement actions  |
|  | Conduct an outfall reconnaissance inventory (ORI) with 100% completed every 10 years  | Date updated outfall spreadsheet submitted to NYSDEC   |
| Number of MS4 outfalls for which an ORI has been performed       |   |  |
| <b>Prepare reports</b>   | Prepare a Special Report for waterbodies with fecal coliform above 200 colonies/100 ml and for unauthorized non-stormwater discharges, due annually on August 1 | Status and location of Integrated Sentinel Monitoring Report   |
| <b>Provide an ongoing public education and awareness program</b> | Implement a public education program on potential hazards of illicit discharges   | List of education activities for public employees  |
|  |   | List of education and outreach programs/events for the general public and businesses, and relevant metric(s) for each (e.g., number of participants, events, or materials distributed) |
|  |   | List of planned educational and outreach programs/ activities to be undertaken in next reporting cycle   |
| <b>Provide training for staff</b>                                | Implement a staff training program on IDDE  | Number of staff trained on IDDE  |

# Construction and Post- Construction (C/PC)







NYSDEC requires construction projects in the MS4 area disturbing an acre or more of soil to obtain coverage for stormwater discharges under the SPDES General Permit for Stormwater Discharges from Construction Activity (GPO-020-001)(NYSDEC CGP). The City's permitting program<sup>13</sup> complements and expands upon the NYSDEC CGP program by reviewing and approving stormwater pollution prevention plans (SWPPPs), inspecting construction activities for stormwater impacts, and inspecting operation and maintenance of post-construction stormwater management practices (SMPs).

Parts IV.E and F of the MS4 Permit require the City to:

- Review and approve Stormwater Pollution Prevention Plans (SWPPPs) for covered development projects
- Maintain an inventory of active construction sites
- Conduct site inspections during construction and enforce proper erosion and sediment control measures as well as proper SMP installation
- Maintain and update annually an inventory of post-construction SMPs
- Conduct SMP inspections and enforce long-term maintenance of SMPs

<sup>13</sup> On June 1, 2019, the rules governing DEP's authority to implement the C/PC program in the MS4 area went into effect. Effective February 15, 2022, the DEP revised its rules – the Unified Stormwater Rule (USWR) expanded the program to the combined sewer area, reduced the threshold of soil disturbance that requires permitting from 1 acre to 20,000 square feet and added as a trigger for permitting, the creation of 5000 square feet or more of impervious area.

- Train DEP staff who will perform SWPPP reviews and site inspections during and after construction
- Verify that construction managers and site operators have received erosion and sediment control training
- Educate relevant stakeholders about the Construction and Post-Construction (C/PC) Program.

DEP administers the C/PC Program by reviewing SWPPPs; issuing stormwater construction and maintenance permits; inspecting and enforcing during and after construction; and responding to public complaints. The C/PC Program includes measures to ensure no net increase (NNI) of the POCs for which a waterbody is impaired, as required by Part II.B.1 of the MS4 Permit. The C/PC Program applies only to certain projects, referred to as covered development projects. Figure 6.1 provides an overview of the program.

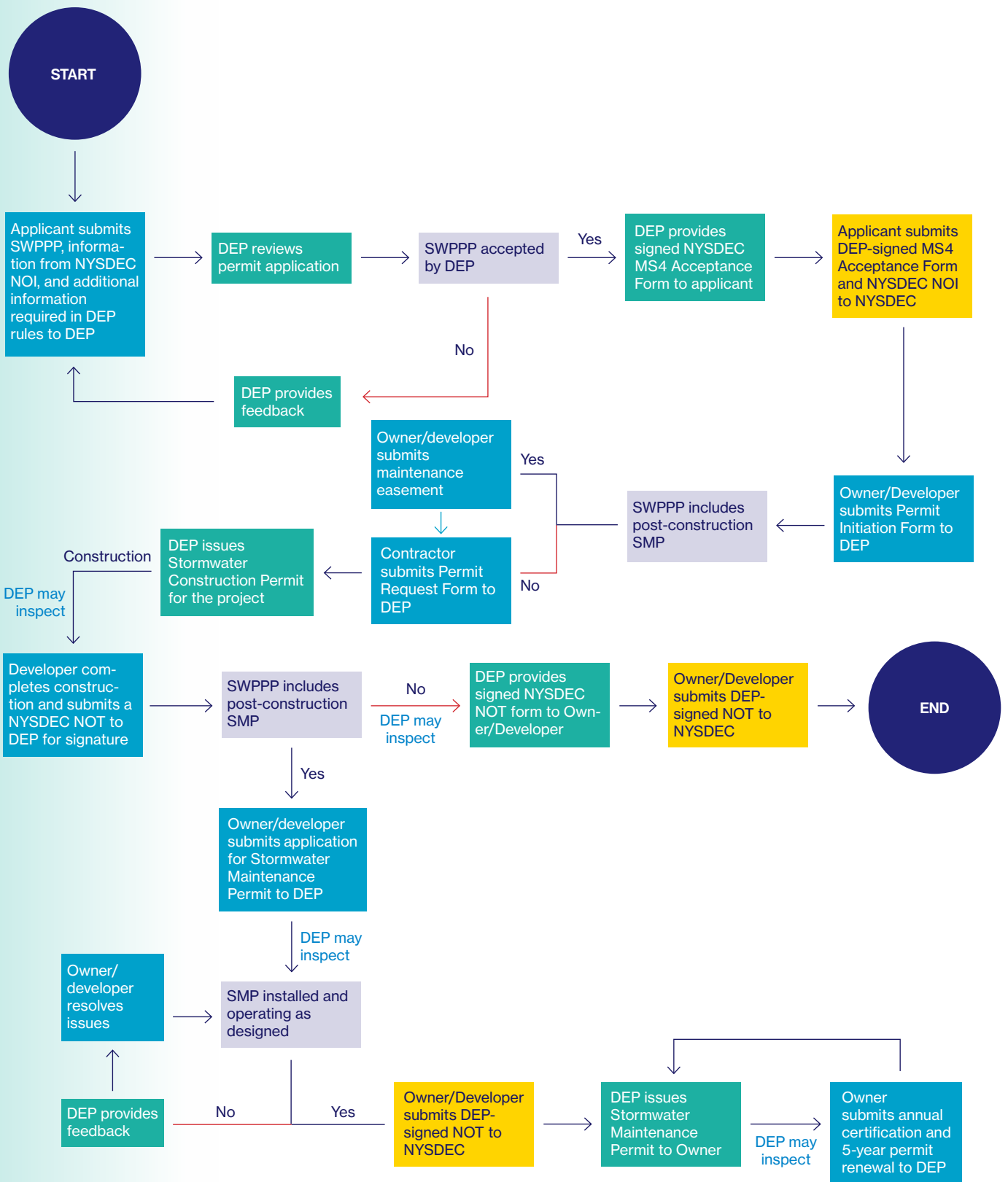
Under the Unified Stormwater Rule (USWR), a covered development project means development activity, private or public, that involves or results in an amount of soil disturbance greater than or equal to 20,000 square feet or creation of 5,000 square feet or more of impervious surface, or covered maintenance activity. Such term includes development activity that is part of a larger common plan of development or sale involving or resulting in soil disturbance greater or equal to 20,000 square feet or creation of 5,000 square feet or more of impervious surface. See Section 6.4 for additional details.

## Overview of C/PC Permitting Process

Figure 6.1

The C/PC Program requires two types of stormwater permits for covered development projects: Stormwater Construction Permits for covered development projects, and Stormwater Maintenance Permits for projects requiring post-construction SMPs. The first step in applying for these stormwater permits is submittal of a permit application to DEP. The permit application consists of the information required in NYSDEC's Notice of Intent (NOI) form, additional information required in DEP's rules, and the plans and reports that together make up the Stormwater Pollution Prevention Plan (SWPPP). DEP will review and approve SWPPPs; refer to Section 6.1 for details. If DEP approves the SWPPP, the developer then submits to DEP the Permit Initiation Form (and, when post-construction SMPs are required, a copy of the maintenance easement), and the contractor with primary responsibility for the project site submits the Permit Request Form to DEP for a Stormwater Construction Permit; refer to Section 6.2.1 for details. DEP may inspect a site during construction.

After construction, the developer or owner submits a completed NYSDEC Notice of Termination (NOT) form to DEP for review and signature. If post-construction SMPs are required for the covered development project, then the developer or owner must also submit to DEP a Stormwater Maintenance Permit application with the completed NYSDEC Notice Of Termination; refer to Section 6.2.2 for details. DEP may inspect post-construction SMPs. If DEP issues a Stormwater Maintenance Permit, then the owner must submit an annual certification and renew the permit every five years.



Applicant/Owner/ Developer Action

Applicant/Owner/ Developer goes to DEC

DEP Action

Decision Point

## 6.1 SWPPP Review and Approval

For a covered development project,<sup>14</sup> an applicant must submit to DEP a permit application that includes all the elements required in the NYSDEC notice of intent (NOI) for coverage under the NYSDEC CGP; a complete SWPPP; and the additional information required by the City's rules. A SWPPP is a plan prepared by a developer to manage stormwater runoff from a construction site. SWPPPs include elements that prevent pollution both during construction and after a project is completed.

DEP hosts the Stormwater Permitting and Tracking System (SWPTS), an online application system, for developers to input their applications and follow the status of DEP's review. The site is accessible at <https://deppermits.microsoftcrmpportals.com/>. DEP ensures that each permit application meets the conditions of the NYSDEC CGP and the additional requirements under the City's rules.

Upon approval of an application, DEP provides the developer with a downloadable MS4 SWPPP Acceptance Form. For projects in the MS4 area, developers then must

submit this form along with the NOI to the NYSDEC main office in Albany to obtain coverage under the NYSDEC CGP.<sup>15</sup> If DEP does not approve the application, DEP provides notice to the applicant that delineates the deficiencies in the SWPPP. The applicant may re-submit the SWPPP for DEP review and approval.

Contents of SWPPPs depend on the individual covered development project. All SWPPPs require an erosion and sediment control component for construction activities, as detailed in Section 6.1.1. Some SWPPPs also require post-construction SMPs that the property owner must implement and maintain following construction, as detailed in Section 6.1.2. SWPPPs for covered development projects draining to impaired waterbodies must meet the NNI requirement detailed in Section 6.1.3.

Finally, SWPPPs for covered development projects that are flood management projects must meet the requirements in Section 6.1.4. The City developed a NYC Stormwater Manual<sup>16</sup> to provide technical guidance for creating SWPPPs that meet the C/PC Program requirements. This Manual is available on the DEP website.<sup>17</sup>

### SWPPP Erosion and Sediment Control Component (Construction)

All SWPPPs must include an erosion and sediment control component, which must meet the requirements in the NYS Standards and Specifications for Erosion and Sediment Control.<sup>18</sup> The SWPPP must include practices to avoid erosion and control sedimentation for each step in the construction process. The SWPPP should also include site plans that show the location of each process; the practices associated with that process; and the details specifying size, materials, and endurance of each practice.

### SWPPP Stormwater Management Component (Post-Construction)

Depending on the covered development project, a SWPPP must also include post-construction SMPs that the property owner must implement and maintain to manage stormwater runoff from the developed site after

Construction at Avenue V pump station



<sup>14</sup> The Unified Stormwater Rule (USWR) expanded the number of covered development projects subject to this program by lowering the soil disturbance threshold to 20,000 square feet or more and including as a trigger for permit coverage, the creation of 5,000 square feet or more of new impervious surface.

<sup>15</sup> Local Law 91 of 2020, extended requirements of the DEP permitting program to the combined sewer area, effective March 26, 2021; projects in the combined sewer area must obtain SWPPP approval and DEP permitting but need not obtain coverage under the NYSDEC CGP.

<sup>16</sup> The USWR includes the updated NYC Stormwater Manual (SWM)

<sup>17</sup> <https://www1.nyc.gov/site/dep/water/unified-stormwater-rule.page>

<sup>18</sup> <https://www.dec.ny.gov/chemical/29066.html>



construction is completed. The NYSDEC CGP and the USWR establish which covered development projects require only an erosion and sediment control component and which also require post-construction SMPs.

The stormwater management component must describe post-construction SMPs that prevent or reduce pollutants from stormwater runoff to waterbodies. SMPs must meet the performance standards in the NYS Stormwater Management Design Manual (SWMDM),<sup>19</sup> including an Operation and Maintenance (O&M) manual that addresses each SMP. The NYC Stormwater Manual to addresses City-specific requirements and preferred practices for covered development projects.

SWPPPs with stormwater management components should include site plans showing both the pre-construction and the proposed post-construction conditions of the site. The developer must show the locations, materials, sizes, and inlet and outlet conditions of all SMPs. In supporting documentation, the developer must include calculations demonstrating that the size and operation of the SMP are adequate, and results of any field testing performed to locate and size the SMP. An O&M manual must also be included to address the requirements for the long-term maintenance of the SMPs.

### No Net Increase (NNI) Requirement

Covered development projects involving a non-negligible change in land use (i.e., land disturbances greater than or equal to 20,000 square feet where there is an increase in impervious cover) draining to impaired waters are required to include a pollutant load analysis in the SWPPP. This analysis should demonstrate that there will be NNI of the POC(s) for which a waterbody is impaired. NYSDEC provided the list of impaired waters in Appendix I of the MS4 Permit and specified the pollutant(s) causing the impairment for each listed waterbody segment.

The No Net Increase Calculator and additional guidance are available on DEP's website.<sup>20</sup> The City provides status updates on the NNI requirement in MS4 Annual Reports.

The POCs listed in Appendix I of the MS4 Permit are floatables (garbage and refuse), nitrogen, phosphorus, and pathogens (fecal coliform). Refer to Chapter 11: Special Conditions for Impaired Waters for more information on NYC impaired waters and POCs.

The SWPPP pollutant load analysis must consist of a narrative that identifies each POC causing impairment in the waterbody and the potential sources of the pollutant; and the management practices that will be used to ensure

NNI of the pollutant to impaired waters. Projects in areas draining to an impaired waterbody (Appendix I of the MS4 Permit) must demonstrate compliance for the individual pollutant(s) for which the waterbody is impaired as follows:

- **Floatables:** Design and implement SMPs in accordance with the NYS Stormwater Management Design Manual (SWMDM)<sup>21</sup>.
- **Nitrogen:** Design and implement practices to show NNI in total nitrogen load. Provide pollutant calculations using the loading and removal data provided in the NYC Stormwater Manual (SWM)<sup>22</sup>.
- **Phosphorus:** Design and implement SMPs in accordance with Chapter 10 of the NYS SWMDM.
- **Pathogens:** Design and implement SMPs in accordance with the NYS SWMDM, with site management practices and enhancements to reduce the potential for pathogens to enter the MS4, as detailed in the NYC SWM.

The NYC SWM details how to determine whether a site drains to an impaired waterbody and how to demonstrate NNI for the POC(s) causing the impairment.

### SWPPP Requirements for Flood Management Projects

Covered development projects that meet the MS4 Permit definition of a flood management project are required to assess in the SWPPP the impacts on the water quality of the receiving water.

Flood management projects refer exclusively to projects designed and functioning to capture, detain, or convey overland flow from a large drainage area to prevent downstream flooding associated with a 100-year or greater storm event. The MS4 Permit excludes projects such as installation and maintenance of storm sewers, high-level storm sewers, Bluebelt storm sewers, drainage inlets, and other projects to improve drainage, alleviate localized flooding, or reduce coastal flooding.

Additionally, SWPPPs prepared for major maintenance or rehabilitation of City-owned structural flood control devices in flood management projects shall, if feasible and cost effective, incorporate the recommended controls resulting from the facility assessments conducted under the PP/GH provisions of the MS4 Permit. Refer to Chapter 7: Pollution Prevention/Good Housekeeping for more details on facility assessments. The City has not identified any existing flood management devices within the MS4 area that meet the MS4 Permit definition.

<sup>19</sup> <http://www.dec.ny.gov/chemical/29072.html>

<sup>20</sup> <https://www1.nyc.gov/site/dep/water/construction-post-construction-program-ms4.page>

<sup>21</sup> <https://www.dec.ny.gov/chemical/29072.html>

<sup>22</sup> <https://www.nyc.gov/site/dep/water/unified-stormwater-rule.page>

## 6.2 DEP Issued Stormwater Permits

Since June 2019, DEP has accepted applications for two types of stormwater permits for covered development projects: Stormwater Construction Permit and Stormwater Maintenance Permit. Covered development projects that have a NYSDEC SPDES acknowledgement letter indicating that the project had coverage under the CGP before June 1, 2019,<sup>23</sup> are not required to apply for either of DEP's permits.

DEP may periodically inspect permitted sites. Appendix 1.1: Enforcement Response Plan includes DEP's protocol for investigating, documenting and, where appropriate, enforcing against unauthorized discharges from construction and post-construction pollution sources into the MS4.

### Stormwater Construction Permit

Stormwater Construction Permits are required for certain covered development projects (in addition to coverage under the NYSDEC CGP for projects of an acre or more in the MS4). A developer must obtain a Stormwater Construction Permit prior to construction. Before issuing the permit, DEP must receive two forms through the SWPTS:

- 1 The Permit Initiation Form that requires the developer to submit the names of the Qualified Inspector and the Contractor, and when required, a fully executed and recorded maintenance easement, as described below; and
- 2 The Permit Request Form that requires the Contractor to complete a Contractor's Certification and provide the Trained Contractor information and the NYSDEC SPDES number received with the NYSDEC Acknowledgement upon filing of an NOI, as applicable.

The purpose of these forms is to identify the individuals responsible for SWPPP implementation. These roles and responsibilities include:

- The Qualified Inspector, who is responsible for weekly inspections of the construction site.
- The Contractor, who is the construction manager or the primary contractor responsible for the development activity. The Contractor must also provide the information for at least one Trained Contractor.
- The Trained Contractor, who is responsible for the daily

erosion and sediment control inspection. This individual must have taken the NYSDEC erosion and sediment control 4-hour class within the last three years and be employed by the contractor responsible for the job.

Except as noted below, to receive a Stormwater Construction Permit from DEP, covered development projects that require post-construction SMP(s) are required to execute and record a maintenance easement and submit a copy to DEP. The purpose of the maintenance easement is to ensure that future owners of the property are aware of the post-construction SMPs and their ongoing obligation to operate and maintain them in accordance with the O&M manual in the approved SWPPP. The easement also puts the property owner on notice that DEP may inspect post-construction SMPs to confirm that the operation and maintenance meet applicable standards.

Most public properties with SMPs, public projects, and projects that only require erosion and sediment controls during construction do not require a maintenance easement. However, if a public entity later transfers a public property with an SMP to a private entity, the NYC Corporation Counsel may require a maintenance easement at that time. The maintenance easement must be recorded with the Office of the City Register or, if applicable, the County Clerk, after approval by the NYC Corporation Counsel.

In addition, DEP requires a Contractor's Certification that ensures that the Contractor has reviewed and agrees to



Green Roof at Zerega EMS Station

<sup>23</sup> See DEP rules for the C/PC permitting program at 15 RCNY 19.1-03.1 for other existing projects not required to obtain DEP Stormwater Construction permits.

implement the approved SWPPP. Subcontractors that are responsible for specific parts of a development activity will need to sign certifications and provide Trained Contractor information as well. Subcontractor certifications and Trained Contractor credentials must be kept with the SWPPP on the site. To receive a permit, a developer must also have a DEP-approved SWPPP, and a NYSDEC-acknowledged NOI for coverage under the NYSDEC CGP.

#### Permit Issuance

DEP issues a Stormwater Construction Permit once all required submittals have been entered in SWPTS and DEP's review is complete. Stormwater Construction Permits are valid for 2 years from the date of issuance. A renewal of the Stormwater Construction Permit may be submitted through SWPTS. Once DEP issues the permit and receives a 7-day notification of the construction start date from the contractor or developer, DEP adds the project to DEP's inventory of active construction sites. A list of active Stormwater Construction Permits is available at <https://deppermits.microsoftcrmpartals.com/>

#### Permit Conditions

The applicant and all contractors and subcontractors are responsible for implementing the approved SWPPP, complying with DEP rules, and complying with the terms and conditions of the Stormwater Construction Permit. A Stormwater Construction Permit must be renewed every two years from date of issuance.

During construction, unforeseen issues may make it necessary for the developer to amend the SWPPP. Major amendments that require changes to structural components (such as a sediment basin or dam for an impoundment), changes that require new stormwater modeling, or changes to modeling methodology will require review and approval by DEP.

If construction begins, but is not completed, the developer must submit a closure plan to DEP as an amendment to the SWPPP. The closure plan must demonstrate that the site will remain stable and that all completed SMPs are operating as designed and in compliance with DEP rules. The developer is also responsible for submitting a Notice of Termination (NOT) to NYSDEC.

If construction is temporarily halted and the site is closed, the developer must continue to maintain the site and the SMPs. The developer must also notify DEP through the SWPTS at least 7 days before an anticipated temporary shutdown. Inspections must be performed by a Qualified Inspector at least once every 30 days to assure that the site is stable and that installed erosion and sediment control practices or completed SMPs are maintained during the shutdown. The developer must immediately fix any issues identified by the Qualified Inspector.

#### Construction Inspections

During construction, DEP staff performs inspections to evaluate compliance with the approved SWPPP. Considering factors such as the extent of soil disturbance, distance to the receiving waterbody, impairments to the receiving waterbody, land slope, soil erodibility, and past performance of the contractor and developer, DEP prioritizes active construction sites for inspection. DEP conducts construction site inspections as part of a routine program and in response to public complaints.

#### Enforcement

When a DEP inspector identifies non-compliance with the SWPPP, the New York City Administrative Code Chapter 5-A of Title 24, or the Rules of the City of New York (RCNY) Chapter 19.1 of Title 15, the inspector may utilize a number of measures to require correction of the condition. The measure taken depends upon the severity of the condition and the impact or potential impact on water quality. DEP follows the Enforcement Response Plan (Appendix 1.1) that identifies each potential enforcement measure. The penalty associated with each enforcement action will be determined based on the identified non-compliance, the number of times a similar issue has been identified on the site, and the ability of those responsible for the covered development project to correct the problem.

#### Permit Termination

A Stormwater Construction Permit expires if the permitted work is not substantially under way within one year or is not completed by a date specified in the permit. This permit also expires if work is suspended or abandoned for a continuous period of 12 months unless the permit expires earlier.

Once the project is constructed, the Qualified Inspector for erosion and sediment control and the developer must sign a NYSDEC NOT stating that the project is complete, and the site is stable. Projects that include post-construction SMPs also require the signature of a Qualified Professional who has inspected the SMPs for conformance to the approved SWPPP.

A developer working on a project that does not include post-construction SMPs will submit to DEP through SWPTS a completed NYSDEC NOT for DEP's signature. If the project includes post-construction SMPs, the developer must submit the NOT with the application for the Stormwater Maintenance Permit. See Section 6.2.2 for details on application for Stormwater Maintenance Permit. DEP reviews the NYSDEC NOT and may choose to inspect a site prior to DEP's signing the NYSDEC NOT. DEP provides the developer with a downloadable copy of the DEP-signed NYSDEC NOT and removes the project from DEP's inventory of active construction sites.



This action by DEP ends the process for projects without post-construction SMPs; however, for MS4 projects, the developer must submit the DEP-signed NYSDEC NOT to the NYSDEC State Office in Albany to terminate coverage under the NYSDEC CGP.

Owners of covered development projects with post-construction SMPs are required to apply for a Stormwater Maintenance Permit at the time of submitting the completed NYSDEC NOT to DEP for signature. See Section 6.2.2 for details and Figure 6.1 for a summary of the permitting process.

### Stormwater Maintenance Permit

Projects that require post-construction SMPs must apply for a Stormwater Maintenance Permit, which may be submitted through SWPTS. The NYSDEC CGP and the USWR establish which covered development projects require only an erosion and sediment control component and which also require post-construction SMPs.

#### Permit Issuance

The application for the Stormwater Maintenance Permit must be submitted through SWPTS and must include: the completed NYSDEC NOT for projects in the MS4 area; as-built plans showing constructed SMPs with the invert elevations identified; and an up-to-date O&M manual for each SMP on the site. Additionally, the owner must include the DEP sewer certification with the permit application. Stormwater Maintenance Permits are valid for five years from the date of issuance; they require renewal every five years and an annual certification from the property owner that the practices are operating as designed. Once a Stormwater Maintenance Permit is issued, DEP adds the practice to its inventory of post-construction SMPs.<sup>24</sup> DEP issues the Stormwater Maintenance Permit to the developer/owner, along with a signed copy of the NYSDEC NOT for the developer/owner to submit to NYSDEC, as applicable.

#### SMP Modifications

To modify an SMP after DEP issues a Stormwater Maintenance Permit, the owner must submit through SWPTS an application for the modification of the SMP. The application to modify the SMP must include design calculations and supporting documentation to demonstrate that the proposed practice is at least as protective of water quality as the existing practice and that it controls stormwater flows as required by the stormwater maintenance component of the SWPPP.

#### Maintenance Inspections

Projects that require a Stormwater Maintenance Permit are subject to inspection by DEP staff. DEP will perform inspections as necessary to ensure compliance with the Stormwater Maintenance Permit and to make sure that the SMP is operated and maintained as designed. DEP may prioritize sites for inspection based on the soils, land use, and the location of the site relative to waterbodies. DEP also performs inspections in response to public complaints.

#### Enforcement

If an inspection reveals non-compliance with the Stormwater Maintenance Permit, such as failure to properly maintain SMPs, the property owner may be subject to penalties and sanctions, as authorized in New York City Administrative Code Chapter 5-A of Title 24. The response depends upon the severity of the condition and the impact or potential impact on water quality and will follow the Enforcement Response Plan (Appendix 1.1). The penalty associated with each enforcement action is based on the identified non-compliance, the number of times a similar issue has been identified on the site, and the ability of those responsible for the operation and maintenance of the SMP to correct the problem.

The City responds to a variety of public complaints related to construction activities: excessive debris, noise or dust; work without a permit or outside approved plans; and illegal dumping of construction materials in catch basins. Refer to Chapter 2: Public Education and Outreach, Section 2.5, for details on how to report through 311 illicit discharges and other potentially harmful water quality impacts.

#### Annual Certification and Permit Renewal

Every year on or before the anniversary date of the Stormwater Maintenance Permit, the owner must submit to DEP, through SWPTS, a signed certification that the SMPs are operating as designed. Every five years, the owner of the site must renew the Stormwater Maintenance Permit by submitting an application for renewal with a report certified by a Qualified Professional that the SMPs are operating as designed. If any post-construction SMPs include structural components, such as a dam for an impoundment, a Professional Engineer licensed in New York must perform the inspections and certification.

<sup>24</sup> This inventory also includes City-owned SMPs and SMPs approved by NYSDEC since 2003

## 6.3 Education, Certification, and Training

DEP SWPPP reviewers and site inspectors are Qualified Professionals or work directly under the supervision of a Qualified Professional. DEP staff who review SWPPPs and perform inspections receive annual training on review and inspection and may attend the NYSDEC-endorsed 4-hour training at least once every three years.<sup>25</sup> Additionally, DEP offers its staff opportunities to take professional development classes in designing, reviewing, and inspecting construction practices for stormwater management.

DEP developed a training program for municipal staff, industry professionals, and other stakeholders on the implementation of the regulations and the use of the SWPTS. Opportunities for the NYSDEC-endorsed 4-Hour Erosion and Sediment Control (ESC) Training can be found on websites of the following entities: NYSDEC,<sup>26</sup> the NYC Soil and Water Conservation District,<sup>27</sup> and the Nassau Soil and Water Conservation District.<sup>28</sup>

25 Per section IV.E.9.b of the NYC MS4 permit, an inspector must complete training every three years, unless the inspector is a qualified professional, as defined in Part VI.B. For a qualified professional, only initial training is required.

26 <http://www.dec.ny.gov/chemical/8699.html>

27 <http://www.soilandwater.nyc/4-hr-esc-training.html>

28 <https://www.nassauswcd.org/4-Hour-ESC-Training>

## 6.4 Threshold Study Results and Unified Stormwater Rule

The City conducted an analysis to shape the C/PC Program for typical development projects in NYC. The purpose of the Lot Size Soil Disturbance Threshold Study for Construction and Post-Construction Stormwater Management (Threshold Study) was to determine an appropriate reduction, in the MS4 area, of the one-acre soil disturbance threshold that triggered the applicability of construction and post-construction stormwater management requirements. The study was completed in 2019. The study recommended the adoption of a 20,000 square foot soil disturbance threshold for both construction and post-construction requirements for public and private projects on tax lots within the MS4 area. By reducing the threshold to include more projects, the C/PC Program aims to further reduce pollution in local waterbodies.

As noted above, the City began implementing the C/PC program at the reduced threshold on the effective date (February 15, 2022) of the USWR, which updated the definition of a covered development project to reflect the approved, reduced threshold of 20,000 square feet as well as an additional trigger for DEP construction permitting: creation of 5,000 square feet or more of impervious surface.

The USWR aligns the Chapter 19.1 (Rules of the City of New York Title 15) Construction/Post-Construction permitting program water quality requirements with Chapter 31 stormwater quantity and flow rate requirements, encouraging covered development projects to use green infrastructure to meet requirements of both Chapters, where feasible.<sup>29</sup>

29 <https://www1.nyc.gov/site/dep/water/unified-stormwater-rule.page>

### SMP Hierarchy

Figure 6.2

| High Priority                         |  | Low Priority   |  |
|---------------------------------------|--|--|--|
| <b>On-Site Vegetated Infiltration</b> | <b>Sub-Surface Infiltration and Green Roof</b>                     | <b>Vegetated Detention with Treatment</b>  | <b>Physical Treatment and Green Roof</b>                         |
| Rain Gardens and Bioretention         | Permeable Pavement, Infiltration Trenches, Turf Fields, Green Roof | Vegetated Open Swales, Constructed Wetlands, Bioretention with Underdrains, Ponds, Sheet Flow to Riparian Area | Sand Filters, Green Roof, Other Approved Filtration Technologies |
| <b>Soil Suitability</b>               |  |  |  |
| <b>High</b>                           | <b>High</b>  | <b>Low</b>   | <b>Low</b>   |
| <b>Space Availability</b>             |  |  |  |
| <b>High</b>                           | <b>Low</b>   | <b>High</b>  | <b>Low</b>   |

## 6.5 Measurable Goals and Program Assessment

Table 6.1 lists measurable goals and measures for identified Construction and Post-Construction best management practices (BMPs). MS4 Annual Reports include these measures to detail the status of each measurable goal and BMP.

Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

Summary of BMPs, Measurable Goals, and Measures for the C/PC Program

Table 6.1

| Best Management Practice (BMP)   | Measurable Goals   | Measures  |
|--|--|---|
| <b>Construction Site Stormwater Runoff Control</b>   | Review and Approve SWPPPs  | Number of SWPPPs reviewed   |
|  | Inspect construction sites and enforce Stormwater Construction Permits | Number of active construction sites in MS4  |
|  |  | The percent of active Stormwater Construction Permit sites inspected once                     |
|  |  | The percent of active Stormwater Construction Permit sites inspected more than once           |
|  |  | Number and type of enforcement actions  |
|  |  | Number of construction site stormwater control trainings planned or completed                 |
|  |  | Number and type of enforcement actions  |
|  |  | Number of post-construction SMPs, including type of practice and contributing impervious area |
|  |  | Number and type of SMPs inspected   |
|  |  | Number and type of SMPs properly maintained, as determined by inspections                     |
| Number of individuals trained in inspection of long-term operation and maintenance of post-construction SMPs |  |   |



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

Municipal Separate Storm  
Sewer Systems of New York City

SPDES Number: NY-0287890



DEP Catch Basin Cleaning





DOT Staten Island Ferry

Pursuant to Part IV.G of the MS4 Permit, the City implements a Pollution Prevention/Good Housekeeping (PP/GH) Program to manage municipal facilities and operations in ways that reduce or control stormwater pollution. The MS4 Permit requires that the City:

- Address municipal operations and facilities that contribute or potentially contribute pollutants of concern (POCs) to the MS4 and to waters of the State through direct drainage
- Comply with regulations associated with the application of pesticides, herbicides, and fertilizers;
- Maintain an inventory of municipal operations and facilities with designation as high, medium, and low priority based on potential for water quality impact
- Self-assess municipal operations and facilities every 2, 5 or 7 years (for high, medium and low priority, respectively) to evaluate adequacy of PP/GH practices to reduce or prevent discharge of pollutants and to make recommendations for improvement

- Include an employee training program
- Require third-party entities performing municipal operations as contracted services to meet the MS4 Permit requirements
- Consider and, if feasible and cost effective, incorporate green infrastructure (GI) during planned municipal upgrades.

This chapter details the City's PP/GH Program for municipal operations and facilities to address the MS4 Permit requirements above. This program includes an inventory of municipal operations and facilities, a priority rating of these facilities and on-site or off-site operations, and a standardized protocol for agency self-assessments. In addition, the City implements training to educate staff on stormwater pollution prevention.

The City implements stormwater control measures (SCMs) that reduce the potential to contribute pollution to the MS4. City agencies also consider the feasibility and costs of GI for PMUs in order to identify additional opportunities to help improve water quality.



## 7.1 Associated Practices

City agencies endeavor to implement in their facilities and operations management practices that help prevent stormwater pollution. These operations are ongoing and, in some instances, satisfy MS4 Permit requirements.

### Operations and Facilities

Operations relevant to the PP/GH Program include, but are not limited to, the following:

- Street and bridge maintenance
- Winter road maintenance including de-icing activities and road salt storage facilities
- Catch basin inspection, hooding, and maintenance
- Vehicle and fleet maintenance
- Park and open space maintenance
- Municipal building maintenance
- Solid waste management (i.e., operating closed municipal landfills or other exposed TSDFs for MSW)
- Erosion and sediment control associated with new construction and land disturbances not subject to Part IV.E of the MS4 Permit
- ROW maintenance
- Marine operations
- Hydrologic habitat modification.

Through the implementation of the PP/GH Program, the City assesses the operations listed above, and enhances or improves them, as necessary.

### Controls for Pesticide, Herbicide, and Fertilizer Application

City agencies conduct operations in accordance with all regulations related to fertilizer, pesticide, and herbicide use. DPR, the largest fertilizer user among City agencies, conducts operations in accordance with the NYS Dishwasher Detergent and Nutrient Runoff Law, NYS ECL, and NYS Agriculture and Markets Law. The NYS Dishwasher Detergent and Nutrient Runoff Law addresses fertilizer application to reduce the quantity of nutrients entering the surface waters of the State; it specifies the legal limits of phosphates allowed in lawn fertilizers, the time of year when application of certain fertilizers is prohibited, and under what conditions fertilizer applications are restricted. Reduction and control of fertilizers entering the environment are also achieved through compliance with §18-44 of Title 15 of the Rules of the City of New York and Local Law 37 of 2005.

Local Law 37 of 2005 addresses the use of pesticides and herbicides by requiring the reduction, management, notification, recordkeeping, and reporting of pesticide use. In conjunction with Local Law 37 of 2005, the City implements Integrated Pest Management (IPM) at its facilities and operations. IPM is an approach that gives preference to physical, mechanical, cultural, biological, and educational methods to control pests by restricting or eliminating resources to pests; and if necessary, prudent use of the least hazardous pesticides. Existing pesticide regulations and IPM educational programs provided by the City promote awareness of safer pest control methods to municipal staff, pest management professionals, and the public.

Annual reporting of City agencies' pesticide usage, as required by Local Law 37 of 2005, allows the City Council and the Interagency Pest Management Committee to identify areas of concern, and to provide guidance on proper management to curtail hazardous pesticide use. In following the requirements under local laws and IPM, the City has controlled the use of pesticides, herbicides, and fertilizers on municipal-use grounds, thereby reducing the amounts of those substances entering MS4 waterbodies and directly discharging into the environment. Ongoing efforts to reduce the use of pesticides and fertilizers also satisfy Part IV.G.1.b of the MS4 Permit.

## 7.2 Inventory and Prioritization of Municipal Facilities and Operations

The City maintains an inventory of municipal facilities and operations located in the MS4 area, per the MS4 Permit. This inventory is dynamic, and agencies are responsible for including inventory updates as part of MS4 annual reporting. Agencies may add or remove facilities from the inventory due to property acquisitions or relocations, or to reflect MS4 mapping updates, as detailed in Chapter 4: Mapping.

The City evaluated each facility's "pollution potential" (i.e., potential to contribute to stormwater pollution) and assigned each a pre-assessment priority rating of high, medium, or low. The pre-assessment priority rating considered factors such as the presence and quantities of POCs, material exposure, frequency of certain activities, and proximity to impaired waterbodies. The priority rating of a facility or operation determines the frequency of on-site self-assessments and may be revised based on subsequent assessment findings.

Using a standardized self-assessment protocol, the City refines priority ratings for facilities, based on site-specific data from the ongoing PP/GH self-assessments, as described in Section 7.3. Giving a facility a high priority rating does not necessarily mean that the facility is a contributor of pollutants. Rather it means that, at the time of assessment, the facility has an inherent risk of contributing pollutants, given its location, types and quantities of materials handled/stored, and/or frequency of certain activities taking place. The most up-to-date information on the facility and off-site operation inventory is included in the MS4 Annual Reports.

The City also used the standardized prioritization protocol to evaluate the pollution potential of common off-site operations relevant to the PP/GH Program: water main and hydrant repair; sidewalk repair; storm sewer system maintenance; winter pavement maintenance; pavement cleaning (sweeping); herbicide, pesticide, and fertilizer application; roadway resurfacing; and curbside garbage removal.

The City of New York has an extensive network of municipal facilities and operations that serve New Yorkers and keep vital infrastructure functioning properly. The MS4 Permit addresses the City's facilities and operations that drain to the MS4 or contribute overland flow in direct drainage areas. A number of these facilities and operations, such as those related to vehicle and equipment cleaning, may have the potential to be sources of stormwater pollution (pollution potential). Through the PP/GH Program, agencies assess their facilities and operations to understand their pollution potential and implement appropriate stormwater control measures to help reduce pollution to the MS4 and surface waters of the State.

### Typical On-Site Operations at City-owned Facilities

Table 7.1

| Vehicle/Equipment Operations   |
|--|
| <ul style="list-style-type: none"> <li>• Vehicle/Equipment Maintenance and Repair</li> <li>• Vehicle/Equipment Cleaning</li> <li>• Vehicle/Equipment Fueling</li> <li>• Truck Bed Management</li> <li>• Vehicle/Equipment Storage</li> </ul> |
| Material Storage Facilities  |
| <ul style="list-style-type: none"> <li>• General Outdoor Storage</li> <li>• Above-Ground Storage Tanks</li> <li>• Underground Storage Tanks</li> <li>• Drum Storage and Management</li> <li>• Material Stockpiles</li> </ul>                 |
| Waste Management Facilities  |
| <ul style="list-style-type: none"> <li>• Waste Transfer Stations</li> <li>• Landfills</li> <li>• Shooting Ranges</li> </ul>  |
| Building Maintenance and Repair  |
| <ul style="list-style-type: none"> <li>• Building Repair and Remodeling</li> <li>• Painting</li> </ul>   |
| Other Types of Facilities  |
| <ul style="list-style-type: none"> <li>• Animal Recreational Facilities/Stables</li> <li>• Swimming Pools</li> <li>• Marine Operations</li> </ul>  |

### Typical Off-Site City Operations

Table 7.2

| Stormwater Collection System Maintenance  |
|---|
| <ul style="list-style-type: none"> <li>• Catch basin/inlet cleaning and repair</li> <li>• Storm sewer/underground facility cleaning/repair</li> <li>• Ditch/open channel cleaning and repair</li> <li>• Green infrastructure/open facility maintenance</li> <li>• Hydrologic habitat maintenance</li> </ul> |
| Paved Surface Maintenance   |
| <ul style="list-style-type: none"> <li>• Pavement Cleaning</li> <li>• Winter Pavement maintenance</li> <li>• Pavement/Sidewalk resurfacing and repair</li> <li>• Spill prevention and response</li> <li>• Bridge/elevated structure maintenance</li> </ul>  |
| Landscaping and Open Space Maintenance  |
| <ul style="list-style-type: none"> <li>• Herbicide/pesticide/fertilizer application</li> <li>• Landscape/ground care</li> <li>• Turf management</li> </ul>  |
| Other Types of Operations   |
| <ul style="list-style-type: none"> <li>• Solid Waste Collection</li> </ul>  |

Because some of these off-site operations provide stormwater quality benefits by removing or controlling potential pollution sources and because few of these off-site operations include large volume material storage or occur frequently at any specific site, their inherent risk of contributing pollutants is lessened. Therefore, the City initially determined these off-site operations had a “low” pre-assessment priority rating. Based on results of the on-going self-assessments, the City has updated and continues to update the priority ratings of off-site operations, as appropriate. Table 7.2 lists typical off-site operations conducted by the City in the MS4 area.

### 7.3 Self-Assessments of Municipal Facilities and Operations

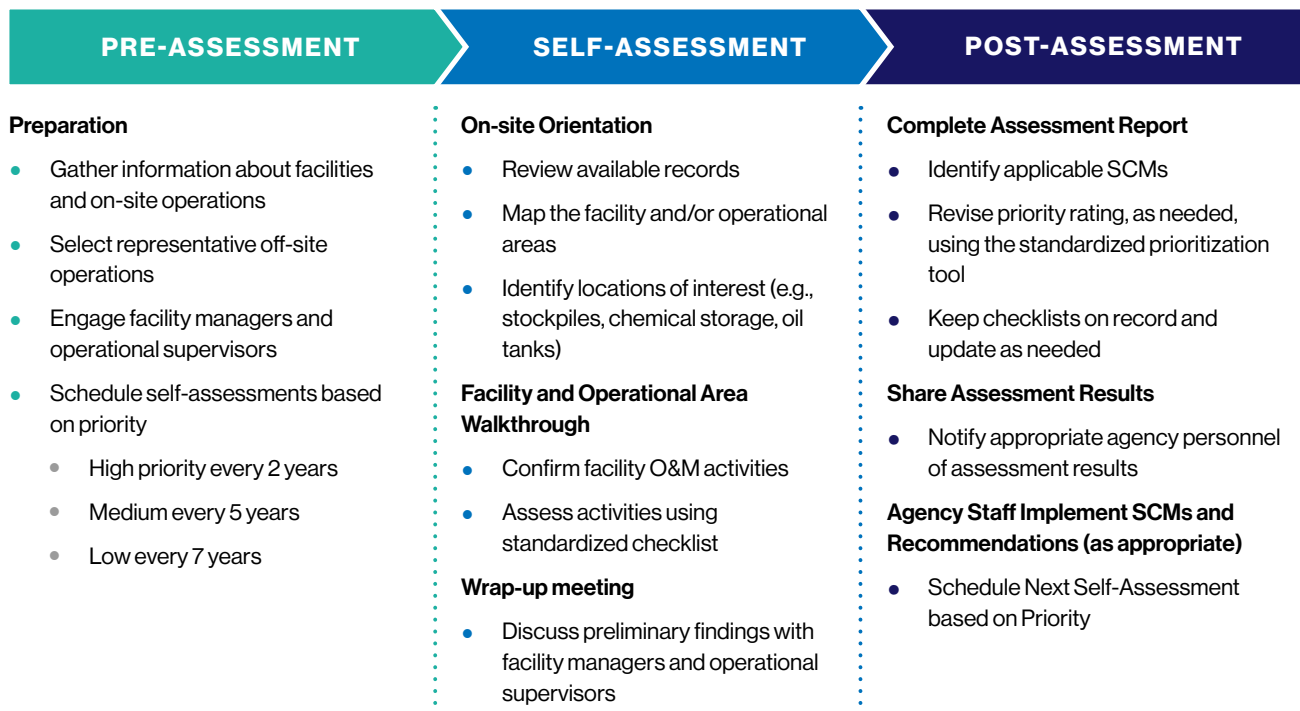
The high, medium, or low priority rating, based on pollution potential of a facility or operation, determines the frequency of self-assessments. Facilities and operations with a higher pollution potential are rated as a higher priority. The City is assessing facilities and operations in the inventory according to their priority ranking utilizing a standardized checklist based on a portfolio of SCMs. High priority self-assessments are to be scheduled every two years, medium every five years, and low every seven

years. A facility or operation may increase or decrease in priority with each assessment, based on the pollution potential evaluated at that time, and will then be subject to the timeline for the next assessment in accordance with its revised priority.

The City developed a standardized self-assessment protocol to ensure consistency across all types of municipal facilities and operations, both on-site and off-site. This protocol allows agencies to determine sources of POCs potentially generated by their facilities and operations and to evaluate the adequacy of their current PP/GH practices. The City also developed guidance on additional PP/GH practices consistent with the NYS Pollution Prevention and Good Housekeeping Assistance Document and EPA MS4 guidance manuals. Agencies select from a suite of SCMs the appropriate practices for implementation at their facilities and operations. The list of the SCMs, which incorporated interagency and public feedback, is available on DEP’s website. After each self-assessment, agencies complete an assessment report with findings, select options from applicable SCMs, and determine timelines for implementation.

Agency staff who conduct the self-assessments determine the appropriate timelines to follow up with the facility or operation and re-assess the effectiveness of recommendations and selected SCMs.

Self-Assessment Protocol  
Figure 7.1





The Stormwater Control Measures (SCMs) developed by the City include options with a range of solutions and effectiveness, which may involve both structural and non-structural controls. Structural controls include oil and water separators, grit chambers, or other devices that remove pollutants. Non-structural controls include operational practices, signage, staff education, and other procedures. The appropriate controls are subject to agency decision-making, which will consider potential effects on agency operations and individual circumstances at each facility.

DSNY salt shed



## 7.4 City Staff Training

The City provides to agency staff PP/GH training that addresses ways to reduce the discharge of pollutants from municipal facilities and operations. An employee meets the MS4 Permit requirement for training by taking any of the courses listed below. Each agency tracks its own staff trainings and summarizes these data for each MS4 Annual Report. The City delivers training to the following personnel through a combination of computer-based and in-person trainings:

- **Agency Staff.** Agencies identify staff responsible for the implementation of SCMs in day-to-day municipal operations, both at municipal facilities and off-site. The City provides computer-based training on stormwater pollution prevention for agency-identified staff. The computer-based training remains accessible online to enable agencies to train or retrain staff, as needed. The computer-based training includes a quiz to gauge comprehension and provides certificates to employees upon their completion of the training. In addition to computer-based training, agencies may offer in-person training provided by agency trainers, as described below.
- **Agency Trainers.** Agencies identify staff to provide in-person training for employees who do not have computer access or prefer in-person training. DEP provided initial train-the-trainer sessions for agency trainers on stormwater pollution prevention, the implementation of SCMs, options for training field personnel, and recordkeeping requirements. These trainers are also responsible for training future staff who will conduct in-person trainings.
- **Agency Site Assessors.** Agencies identify site assessors responsible for conducting the self-assessments, reprioritizing agency facilities and operations, evaluating SCMs and recommendations, and, as necessary, re-assessing the effectiveness of recommendations and selected SCMs. DEP provided initial in-person classroom trainings for the designated site assessors for each agency. Going forward, agency site assessors will train newly designated site assessors on the self-assessment protocol.

## 7.5 Green Infrastructure (GI) Evaluation for Planned Municipal Upgrades (PMUs)

Each individual agency, as required by Part IV.G.2 of the MS4 Permit, considers and incorporates feasible and cost-effective runoff reduction techniques and GI during PMUs, including within municipal rights of way (ROW). Examples of GI include bioswales, green streets, grass swales, rain gardens, curb cuts to reroute flow to below-grade infiltration areas, or other low-cost improvements that provide runoff treatment or reduction.

The City has developed criteria for agencies to use during upgrade planning as a consistent method for assessing feasibility of GI implementation. Agencies incorporate GI if all the following evaluations indicate it may be appropriate and feasible.

- Evaluation of PMU
  - » Capital project, as defined in the NYC Charter, for building construction/renovation and/or work in the ROW
  - » Meets a cost threshold of \$2,000,000
  - » Will generate stormwater runoff and POCs after construction is complete.
- Evaluation of site conditions to identify appropriate SMP from hierarchy in NYC Stormwater Manual.

- » Analysis of physical site conditions identifies any siting and space constraints, such as the presence of utility lines or adjacent structures.
  - » Hydrogeological analysis per the NYC Stormwater Manual determines site suitability, including soil conditions.
  - » Environmental analysis determines whether potential implementation of GI could exacerbate existing environmental contamination conditions and if there are existing institutional or engineering controls.
- Evaluation of cost-effectiveness. Agencies evaluate construction, operation, and maintenance costs to determine whether a project would be cost-effective.

If the upgrade project meets the criteria for a Stormwater Construction Permit, the agency will follow those permit requirements and the project will not be considered a PMU under the PP/GH program (see Chapter 6: Construction and Post-Construction, which describes the permit requirements for post-construction stormwater management, which will be required for private and public development and re-development projects that meet the definition of a covered development project).



DOT trucks under cover and within secondary containment



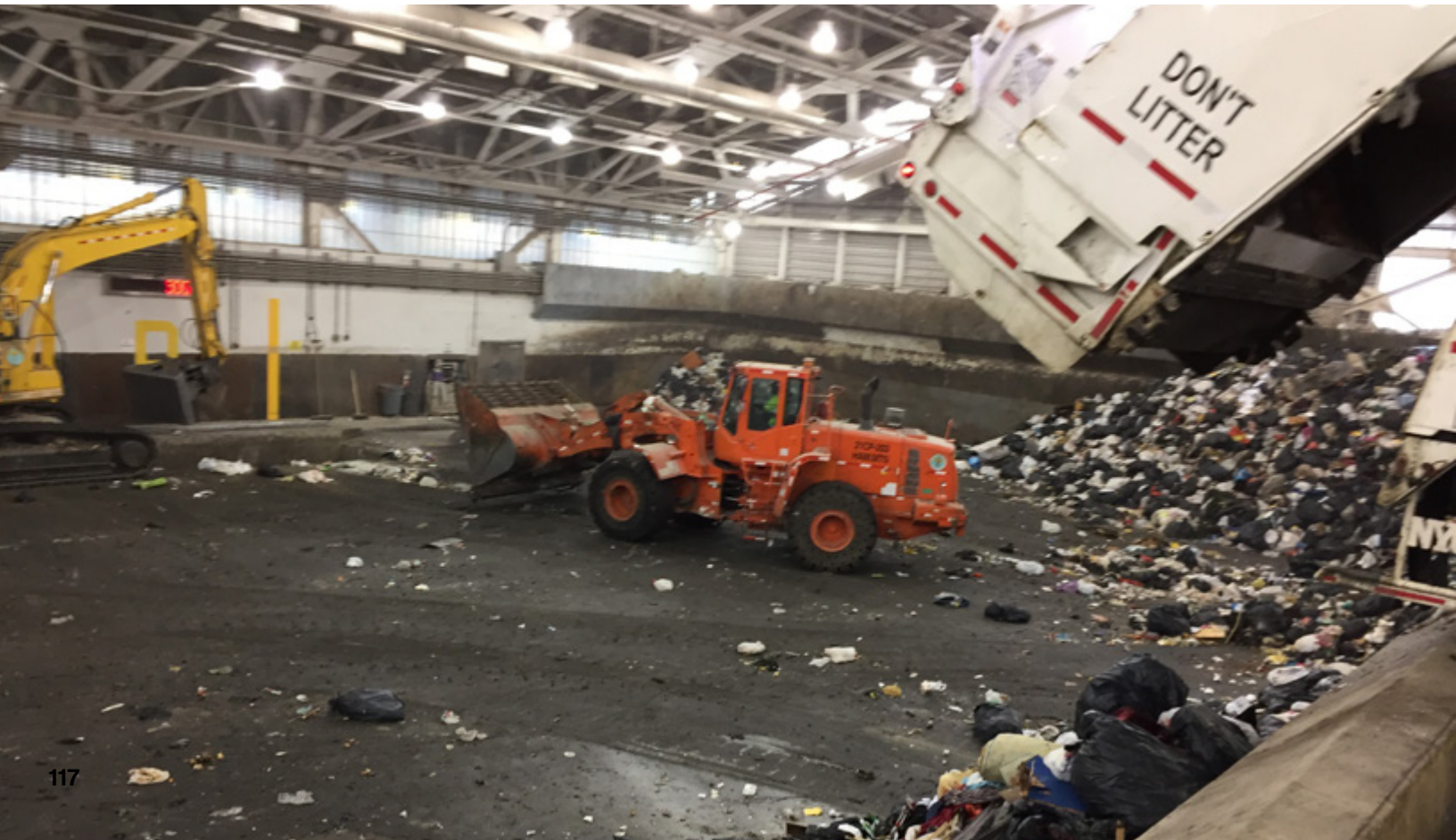
## 7.6 Requirements for Third-Party Contractors

The City requires contractors working at City facilities and conducting City operations to meet PP/GH Program requirements. Refer to Chapter 1: Legal Authority and Program Administration for information on reliance on third parties.



Rain garden construction in Flushing, Queens

DSNY fully-enclosed marine transfer station





## 7.7 Measurable Goals and Program Assessment

Table 7.3 lists measurable goals and measures for identified PP/GH best management practices (BMPs). MS4 Annual Reports include these measures to detail the status of each measurable goal and BMP.

Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.



Green Roof at Parks Department's Five Borough Administrative Building

### Summary BMPs, Measurable Goals, and Measures for the PP/GH Program

Table 7.3

| Best Management Practice (BMP)  | Measurable Goals  | Measures  |
|---|---|---|
| <b>Provide program for pollution prevention and good housekeeping for municipal operations and facilities</b> | Maintain an inventory of municipal operations and facilities                      | Number of facilities, by priority   |
|   |   | Number of off-site operations, by priority  |
|   | Implement the PP/GH Program   | Acres of parking lots swept   |
|   |   | Miles of street swept   |
|   |   | Number of catch basins inspected, cleaned, and/or maintained                                    |
|   |   | Miles of storm sewers inspected   |
|   |   | Miles of storm sewers cleaned   |
| Number of self-assessments completed, by priority ranking   |   |   |
| <b>Provide for staff training</b>   | Implement a PP/GH training program  | Number of staff trained on PP/GH  |
|   |   | Number of staff trained in inspection and maintenance of municipal GI assets and SMPs           |
| <b>Consider and Implement runoff reduction and GI</b>   | Consider runoff reduction techniques and green infrastructure                     | Number of PMUs evaluated for runoff reduction/GI opportunities                                  |
|   |   | Number of PMUs where runoff reduction/GI was incorporated                                       |
| <b>Inspect and maintain GI</b>  | Implement an inspection and maintenance program for GI and post-construction SMPs | Number of municipally constructed GI assets and post-construction SMPs inspected and maintained |

# Industrial and Commercial Stormwater Sources (I/C)







## NYC Waterfront Industrial Site

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 continues to administer the MSGP program, DEP is responsible for the inspection and enforcement portions of the program at privately owned MSGP-covered facilities in the MS4 area. Through the MS4 Industrial and Commercial Stormwater Program (I/C Program), DEP also assesses an inventory of unpermitted facilities to determine their potential need for SPDES permit coverage.<sup>30</sup>

In accordance with Part IV.H of the MS4 Permit, the City:

- **Maintains a facility inventory of all publicly and privately owned industrial and commercial sites/sources that could discharge POCs in stormwater to the MS4, including;**
  - » unpermitted facilities that will be assessed for SPDES applicability
  - » industrial facilities subject to SPDES MSGP or individual SPDES permit
  - » facilities subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA), that process, store or handle hazardous or toxic chemicals or substances exposed to stormwater
  - » hazardous waste TSDFs

- » other industrial/commercial sites that the City determines may contribute a significant pollutant load to the MS4.

- **Assesses unpermitted industrial and commercial facilities to determine if**

- » they are significant contributors of POCs to impaired waters
- » they perform activities in Sectors A through AC of the SPDES MSGP.

- **Inspects industrial and commercial facilities that are permitted by the NYSDEC MSGP program, except for City-owned MSGP facilities.**

- **Uses the approved Enforcement Response Plan per Part III.C of the MS4 Permit for all enforcement actions; and**

- **Implements a training program for all staff conducting facility inspections.**

This chapter describes the I/C Program, which includes the facility inventory, unpermitted and MSGP-permitted facility assessment and inspection procedures, a database tracking system, and inspection staff training. Chapter 1: Legal Authority and Program Administration discusses the City's rulemaking process and legal authority for the I/C Program. The Enforcement Response Plan in Appendix 1.1 describes DEP's enforcement response protocol for investigating, documenting, and enforcing against unauthorized or potential discharges to the MS4 as well as a facility's failure to comply with its SWPPP.

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<sup>30</sup> On June 1, 2019, the rules governing DEP's authority to implement the I/C program went into effect.

# The NYSDEC Industrial Stormwater Multi-Sector General Permit

The Clean Water Act provides that stormwater discharges to waters of the United States (including discharges through the MS4) associated with certain industrial or commercial activities are unlawful, unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit.

In New York, EPA has approved the state program enacted through the administration of the State Pollutant Discharge Elimination System (SPDES) program. Industrial facilities engaged in certain industrial activities must obtain permit coverage for stormwater discharges to

waters of the United States (including through the MS4) through either an individual industrial SPDES permit or the SPDES Multi-Sector General Permit; or they must provide certification, using the No Exposure Exclusion, that industrial activities are not exposed to stormwater.

- Table 8.1 lists the industrial sectors subject to MSGP permitting.
- Permits are required for discharges from a conveyance that is used for collecting and carrying stormwater, and that is directly related to manufacturing, processing or raw materials storage areas.

## Sectors of Industrial/Commercial facilities Subject to NYSDEC's MSGP

Table 8.1

| Sector | Name   | Sector | Name   |
|--------|--|--------|--|
| A      | Timber Products  | Q      | Water Transportation   |
| B      | Paper and Allied Products                                  | R      | Ship and Boat Building or Repairing Yards  |
| C      | Chemical and Allied Products                               | S      | Air Transportation   |
| D      | Asphalt Paving and Roofing Materials and Lubricants        | T      | Treatment Works  |
| E      | Glass Clay, Cement, Concrete, and Gypsum Products          | U      | Food and Kindred Products  |
| F      | Primary Metals   | V      | Textile Mills, Apparel, Other Fabric Product Manufacturing                         |
| G      | Metal Mining (Ore Mining and Dressing)                     | W      | Furniture and Fixtures   |
| H      | [Reserved]   | X      | Printing and Publishing  |
| I      | Oil and Gas Extraction and Refining                        | Y      | Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries |
| J      | Mineral Mining and Dressing                                | Z      | Leather Tanning and Finishing  |
| K      | Hazardous Waste Treatment, Storage, or Disposal Facilities | AA     | Fabricated Metal Products  |
| L      | Landfills and Land Application Sites                       | AB     | Transportation Equipment, Industrial or Commercial Machinery                       |
| M      | Automobile Salvage Yards                                   | AC     | Electronic, Electrical, Photographic, and Optical Goods                            |
| N      | Scrap Recycling Facilities                                 |        |  |
| O      | Steam Electric Generating Facilities                       |        |  |
| P      | Land Transportation  |        |  |

## 8.1 Related Programs

Industrial and commercial facilities citywide are subject to various environmental regulations, including the following DEP programs that inspect certain facilities and enforce relevant regulations.

### Industrial Pre-Treatment Program

The Industrial Pre-Treatment Program regulates discharges of specific pollutants from certain facilities into the City's sewer system. This program is implemented citywide. In the MS4 area, the City inspects facilities to evaluate industrial processes, ensure compliance with Federal and City wastewater regulations, and assess outdoor storage, handling, and transferring areas.

### Right-to-Know Program

The NYC Community Right-to-Know Law authorizes the DEP Division of Emergency Response and Technical Assessment (DERTA) to regulate the storage, use, and handling of hazardous substances. As part of the enforcement of the Law, DERTA oversees the use and storage of hazardous substances that pose a threat to public health and the environment in NYC. This program manages the reporting and storage of hazardous substances by requiring businesses and facilities throughout the five boroughs to file a report annually detailing the quantity, location, and chemical nature of hazardous substances stored within their facilities.

Industrial Facility



31 This inventory was revised based on discussions with DEC after publication of the 2020 MS4 map. DEC agreed that facilities located more than 500 feet from and downgradient of the MS4 area boundary would not be included in the inventory.

32 The City and NYSDEC decided, after the SWMP was approved in September 2019, that NYSDEC (not DEP) would inspect and enforce at publicly owned MSGP facilities in the MS4 area.

## 8.2 Industrial and Commercial Facility Inventory

During SWMP development, using the Historical MS4 Map, information from NYSDEC and various databases, DEP created a facility inventory<sup>31</sup> of all publicly and privately owned industrial and commercial sites that may conduct activities within the industrial sectors covered by the MSGP permit, and other industrial/commercial facilities that might generate a significant pollutant load.<sup>32</sup> Table 8.1 lists the industrial sectors.

The Industrial and Commercial Facility Inventory (I/C Facility Inventory) includes the following information:

- General facility information (e.g., name, address, contact information, block and lot, etc.)
- Applicable North American Industry Classification System (NAICS) and Standard Industrial Classification (SIC) codes
- Information regarding products made or services provided at the facility, such as the facility's Industrial Sector category
- Receiving waterbodies and any associated impairments
- Whether the facility generates POCs for which the receiving waterbody is impaired
- Whether the DEP Industrial Pretreatment Program already regulates the facility
- Whether the SPDES MSGP or an individual SPDES permit already regulates the facility; and
- Whether the facility is a City-owned SPDES MSGP facility, which will remain under DEC's jurisdiction

From 2016 to 2018, DEP screened the facilities in the initial I/C Facility Inventory through a process illustrated in Figure 8.1 and categorized the facilities for initial DEP action.

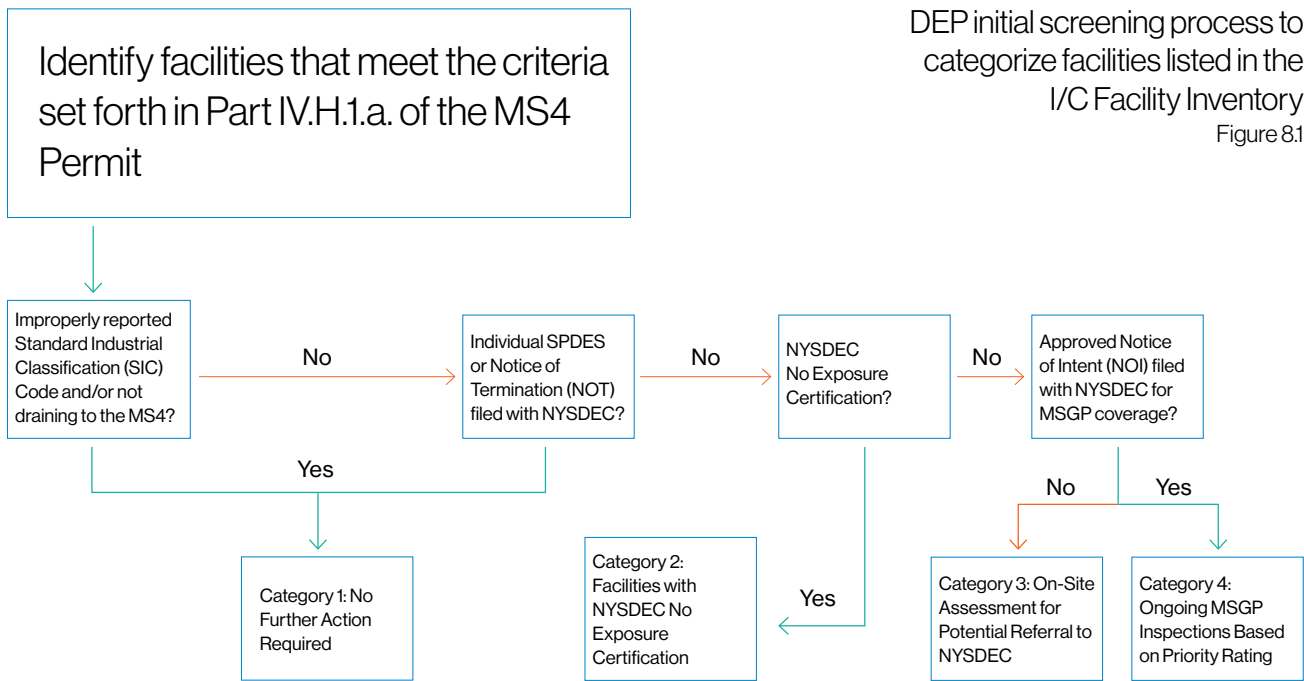
### Category 1: No Further Action

In accordance with the screening process illustrated in Figure 8.1, DEP classified facilities with one or more of the following characteristics as requiring no further action:

- Improperly reported Standard Industrial Classification (SIC) Codes and correct code not subject to MSGP
- Not draining to the MS4
- Individual SPDES permit coverage
- Notice of Termination (NOT) filed with NYSDEC



DEP initial screening process to categorize facilities listed in the I/C Facility Inventory  
Figure 8.1



These facilities remain in the I/C Facility database for comparison with future inventory updates. DEP adds to this category those unpermitted facilities assessed by DEP (Category 3) and found not to require referral for SPDES coverage or not to be draining to the MS4.

### Category 2: Facilities with NYSDEC No Exposure Certification

A “No Exposure” facility has all its industrial materials and activities protected by a storm-resistant shelter to prevent their exposure to rain, snow, snow melt, and/or runoff. Section 8.3 describes how the I/C Program addresses facilities with No Exposure Certifications.

### Category 3: On-Site Assessment for Potential Referral to NYSDEC

Based on the screening process illustrated in Figure 8.1, DEP classified facilities with all the following characteristics as requiring an on-site initial assessment:

- Meets the criteria set forth in Part IV.H.1.a of the MS4 Permit;
- Discharges stormwater to the MS4;
- Is not covered under an existing MSGP or individual SPDES permit; and
- City has photographic evidence of industrial and commercial activity.

Section 8.4 details the assessment process for unpermitted facilities in the I/C Facility Inventory. DEP inspects these facilities to assess their industrial activities’ exposure to stormwater and to determine whether the facilities generate significant contributions of POCs to impaired waters.

If DEP determines that a facility is not a significant contributor, DEP categorizes the facility as no further action (Category 1).

If DEP determines that a facility is a significant contributor of POCs to impaired waters, as identified in Appendix I of the MS4 Permit, DEP may refer the facility to NYSDEC to determine if SPDES permit coverage is required.<sup>33</sup> After referral, NYSDEC may direct the facility to apply for an individual SPDES permit or may direct the facility to seek coverage under the MSGP by filing either a Notice of Intent (NOI) or a Certificate of No Exposure application.

Facilities that receive MSGP coverage become part of the ongoing inspections under the I/C Program (Category 4). Facilities that receive an individual SPDES permit are categorized as no further action (Category 1), and NYSDEC inspects those facilities. Facilities that receive No Exposure Certification are placed in Category 2.

If DEP observes an illicit discharge at a facility site, DEP will address the discharge per Chapter 5: Illicit Discharge Detection and Elimination.

<sup>33</sup> The City will provide to DEC annually (in the MS4 Annual Report) a memorandum identifying industrial and commercial sites/sources that DEP determines may not meet MSGP applicability but should be identified and tracked because they may potentially contribute a significant pollutant load to the MS4.

### Category 4: Ongoing MSGP Inspections Based on Priority Rating

DEP prioritizes facilities with MSGP coverage into high, medium, and low categories based on their potential for water quality impact. Inspection frequency is based on the priority rating. Section 8.5 details prioritization, inspection frequency, and the inspection process for permitted facilities with MSGP coverage.

DEP updated the original inventory based on the 2020 MS4 Map and updates the I/C Facility Inventory with any new information from on-site assessments. The 2022 MS4 permit requires DEP to update the I/C Facility Inventory annually, using new information from source databases and through NYSDEC coordination. Facilities assessed during this permit cycle as part of Category 3 assessments will not be included in the inventory updates if DEP determines they are not significant contributors of POCs. Further, facilities classified as Category 1 during this permit cycle will not be part of the inventory updates for future Category 3 assessments.

The City responds to a variety of public complaints related to industrial activities: air quality, noise, odor, waste management, and toxins and hazards. As part of the I/C Program, DEP inspectors may also respond to stormwater pollution complaints at facilities in the I/C Inventory. Refer to Chapter 2: Public Education and Outreach, Section 2.5, for details on how to report illicit discharges or potentially harmful water quality impacts.

## 8.3 No Exposure Facility Inspections (Category 2)

Category 2 facilities are not scheduled for regular inspections. If DEP receives a public complaint about potential stormwater pollution, and determines that the facility is in Category 2, DEP will conduct an inspection. If DEP determines that the facility is a significant contributor of POCs, it will refer the facility to NYSDEC for possible permitting.

## 8.4 Unpermitted Facility Assessments (Category 3)

From 2019 to 2022, DEP assessed approximately 1,098 unpermitted facilities listed in the original I/C Facility Inventory. The on-site assessments served three main purposes:

- Confirm the facility is categorized under the proper SIC Code,
- Assess the presence of industrial activities that could contribute significant amount of POCs to stormwater, and
- Determine the level of exposure to stormwater and potential for pollution.

Through the on-site assessments, DEP determines whether to refer a facility to NYSDEC. If DEP refers a facility, NYSDEC will then determine whether SPDES permit coverage is required. Figure 8.2 is a summary of DEP's assessment procedures.

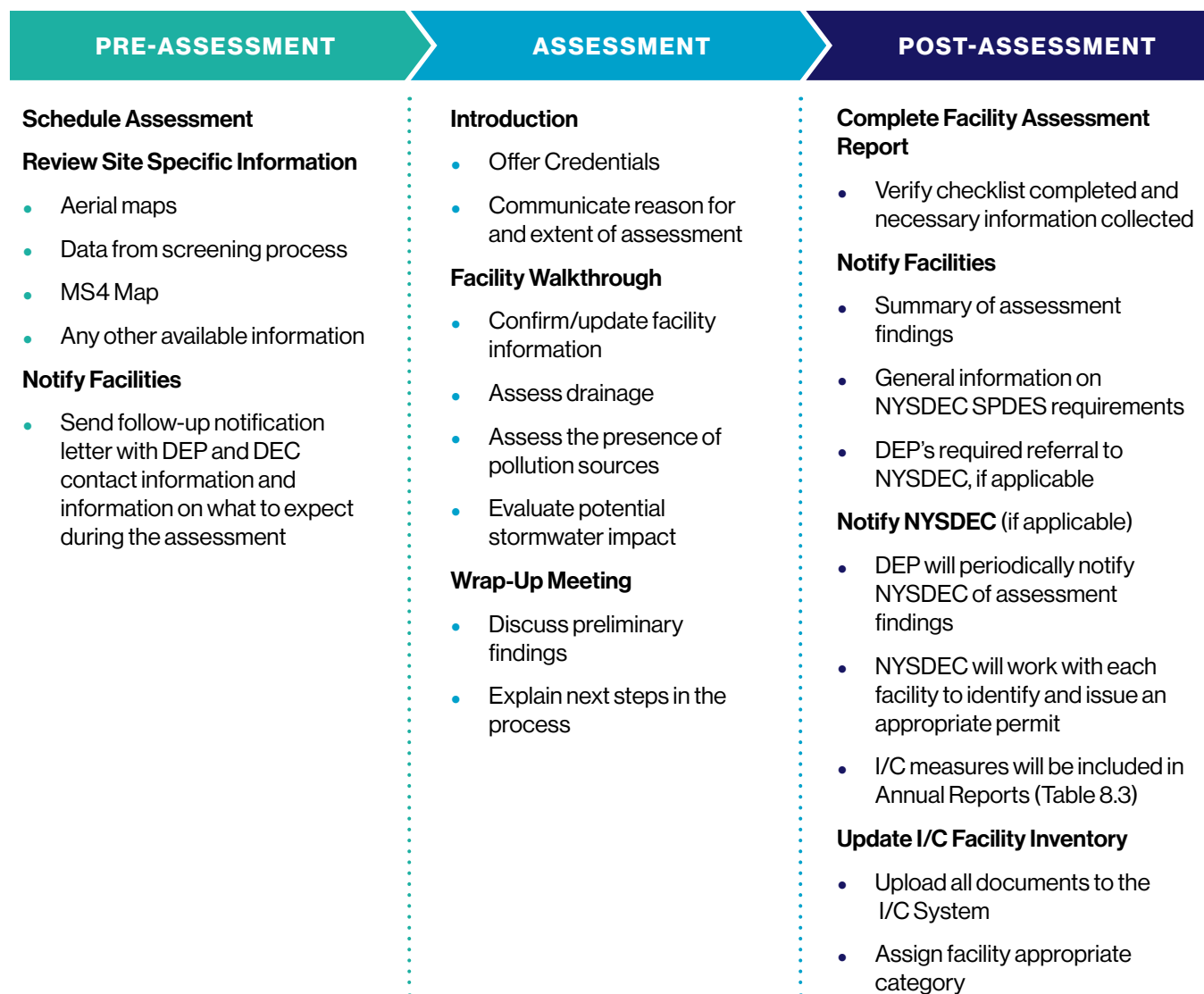
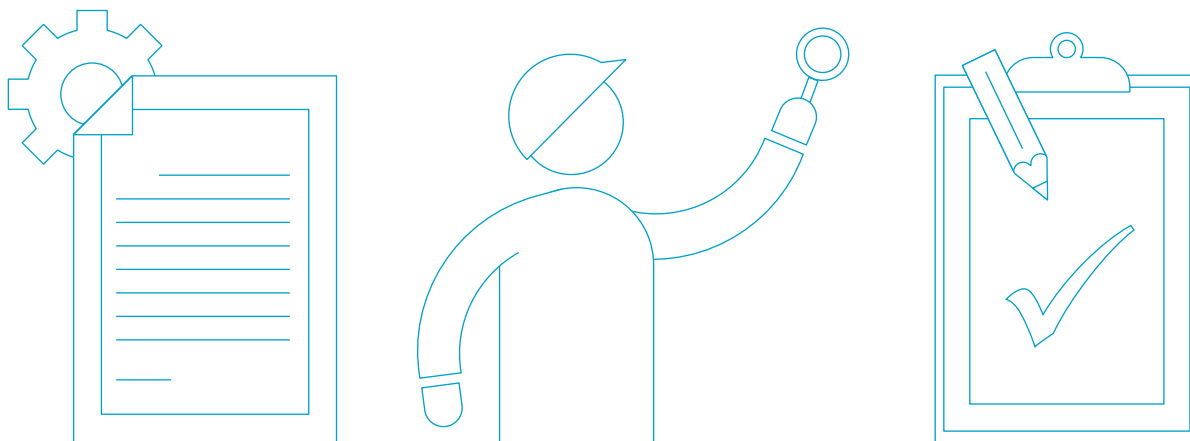
DEP sends an initial notification to an unpermitted facility, explaining the I/C Program and the DEP facility assessment process. DEP sends a follow-up notification that it will assess the facility within the next 90 days and then calls 48 hours in advance of its assessment date. DEP performs assessments following the I/C Program SOPs for Unpermitted Facility Assessments. The procedures are accessible on the DEP website.<sup>34</sup> DEP encourages the facility manager or owner to participate in the inspection to provide information, answer questions, and learn about permit applicability.

At the end of a facility's assessment, DEP typically meets with the facility manager or owner to discuss preliminary findings, identify next steps, answer any questions, and provide educational materials. DEP also describes how to seek SPDES permit coverage from NYSDEC, if necessary.

<sup>34</sup> <https://www1.nyc.gov/site/dep/water/industrial-commercial-stormwater-program-ms4.page>

# DEP Assessment Process for Unpermitted Facilities in the I/C Facility Inventory

Figure 8.2





After the on-site assessment, DEP prepares a Facility Assessment Report with information on its findings regarding the facility's stormwater exposure, making a determination as to whether the facility is a significant contributor or potential significant contributor of POCs to impaired waters. DEP shares its Facility Assessment Reports with NYSDEC, referring to NYSDEC any facility deemed to be a significant contributor or potential significant contributor of POCs. DEP also sends a follow-up letter to inform the facility of any referral to NYSDEC, to summarize findings of the assessment, and to share the Facility Assessment Report.

## 8.5 MSGP-Permitted Facility Inspections (Category 4)

Beginning in 2019,<sup>35</sup> DEP inspected the permitted facilities in accordance with their initial NYSDEC-recommended priority ratings to determine MSGP compliance. DEP uses information from its inspections to determine the facilities' potential water quality impact and to prioritize the sites for future inspections. DEP also prioritizes newly permitted MSGP facilities based on their potential water quality impact.

Table 8.2 indicates how often DEP will inspect a facility based on its priority rating.

The factors contributing to potential water quality impacts include:

- Pollutant sources on site
- Proximity to a waterbody

<sup>35</sup> After 6/1/19 effective date of DEP rules covering the I/C program.

### Inspection frequency criteria for MSGP facilities

Table 8.2

| Priority / Criteria        | Inspection Frequency  |
|----------------------------|---|
| High Priority              | Annual  |
| Medium Priority            | Every 3 years   |
| Low Priority               | Every 5 years   |
| Failed Previous Inspection | Within one year following previous inspection or as per the conditions in the enforcement action until compliance is achieved |

- Potential for POC discharges or other water quality impacts to impaired waters
- Violation history

Figure 8.3 summarizes the characteristics of MSGP-permitted facilities that determine their potential water quality impacts and priority ratings for inspection frequency.

DEP sends a one-time notification to an MSGP-permitted facility that DEP will be conducting inspections on behalf of NYSDEC. The inspections include conducting visual observations to identify any unauthorized discharges, illicit connections, and potential discharges of pollutants

### Characteristics of High, Medium, and Low Priority MSGP Facilities

Figure 8.3

| High Priority  |   |                                      |                             |
|--|---|--------------------------------------|-----------------------------|
| Significant exposed sources of pollutants of concern | Adjacent to an impaired waterbody listed in Appendix I of the MS4 Permit                  | Limited control of exposed sources   | Repeated major violations   |
| Medium Priority                                      |   |                                      |                             |
| Moderate exposed sources of pollutants of concern    | Less than 2,000 feet from an impaired waterbody listed in Appendix I of the MS4 Permit    | Effective control of exposed sources | Occasional minor violations |
| Low Priority   |   |                                      |                             |
| Limited exposed sources of pollutants of concern     | Greater than 2,000 feet from an impaired waterbody listed in Appendix I of the MS4 Permit | Effective control of exposed sources | No violations               |

to stormwater; evaluating the facility's compliance with applicable MSGP requirements; and evaluating the facility's compliance with any other relevant local stormwater requirements.

For these inspections, DEP follows the I/C Program SOPs for MSGP Inspections, which are available on the DEP website.<sup>36</sup>

DEP encourages the facility manager or owner to participate in the inspection to provide information, answer questions, and learn about permit compliance. At the end of the inspection, DEP typically reviews preliminary findings, resolves outstanding questions, and explains the next steps. DEP then completes a Facility Inspection Report, which includes the inspection date and time, name and signature of inspector, weather information, information about any discharge observed or previously observed at the site, any incidents of non-compliance, control measures requiring maintenance, failed control measures, and new control

measures needed. The facility will receive a follow-up letter on MSGP compliance status. This letter may include a copy or summary of the Facility Inspection Report including necessary corrective actions; information on a follow-up inspection; and/or potential enforcement actions.

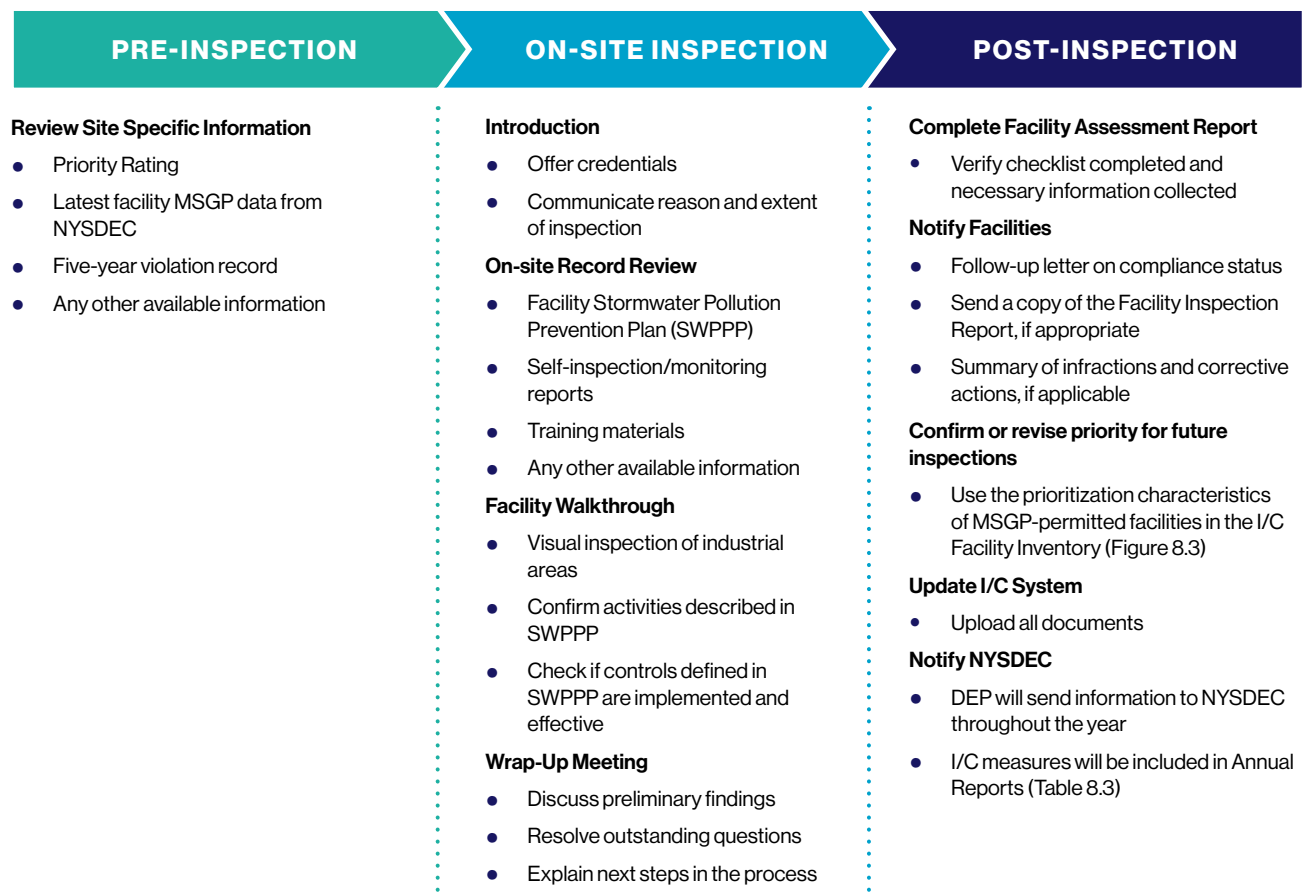
Facilities submit their MSGP annual reports to NYSDEC, and, in addition, send copies of these submittals to DEP. Details on how to submit the annual reports to DEP are on the DEP website.<sup>37</sup>

If a facility is not in compliance with the MSGP, DEP may issue verbal/letter warnings, orders, and/or summonses (formerly known as "notices of violation" or "NOVs") with penalties and compliance schedules. Refer to Appendix 1.1 Enforcement Response Plan for more details. After an inspection is completed, DEP confirms or revises the facility's potential water quality impact for future inspections. Figure 8.4 summarizes the inspection process for permitted facilities with MSGP coverage.

36 <https://www1.nyc.gov/site/dep/water/industrial-commercial-stormwater-program-ms4.page>

37 <https://www1.nyc.gov/site/dep/water/industrial-commercial-stormwater-program-ms4.page>

DEP Inspection process for facilities with MSGP coverage listed in the I/C Facility Inventory  
Figure 8.4



## 8.6 Industrial and Commercial Tracking System

DEP maintains a database tracking system for the I/C Facility Inventory (I/C System) to store facility information; generate assessment and inspection schedules; track assessment and inspection results; store facility enforcement history; and track enforcement actions. DEP also uses the I/C System to manage responses to public complaints.

DEP stores information about each facility in the I/C System and uses that information to create partially pre-filled inspection checklists. DEP records inspection results and any violations, enforcement actions, and follow up-activities in the I/C System. Based on the inspection results, the system generates follow-up notifications to DEP for the next inspection.



## 8.7 Inspection Staff Training

DEP trains all staff engaged in the I/C Program on how to properly conduct inspections, prepare reports, and issue violations. DEP bases the trainings on real case studies and provides the opportunity for staff to learn from experienced industrial stormwater professionals. Staff training includes the following elements:

- Introduction to EPA's Clean Water Act and industrial stormwater pollution
- Overview of I/C Facility Inventory development
- Case studies of industry inspections
- Field inspection best practices for accessing facilities
- Field inspection process and checklists
- Use of the I/C System
- Site inspections with examples on how to review non-structural and structural BMPs
- Requirements of other stormwater general permits or related local requirements
- Post-inspection procedures and inspection tracking
- Enforcement.

Training also includes case studies of both successful and inadequate SCMs and considerations for inspecting a broad range of SCMs – from simple to complex. The training is provided in both classroom and field environments, including having new inspectors shadow more experienced inspectors. Follow-up training is provided every other year to address changes in procedures, techniques, and staffing. DEP certifies that training has been completed by providing a signed training certification to NYSDEC every other year.<sup>38</sup>

<sup>38</sup> MS4 Permit requires re-certification every 2 years from March 14, 2019. Next certification will be due 3/14/25.



## 8.8 Measurable Goals and Program Assessment

Table 8.3 lists measurable goals and measures for identified Industrial and Commercial Stormwater Sources BMPs. MS4 Annual Reports include these measures to detail the status of each measurable goal and BMP.

Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through

achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

### Summary of BMPs, Measurable Goals, and Measures for the I/C Program

Table 8.3

| Best Management Practice (BMP)                                 | Measurable Goals   | Measures   |
|--|--|--|
| Provide an industrial and commercial pollution control program | Implement an inspection and assessment program for unpermitted industrial and commercial sources | Number of unpermitted industrial and commercial facilities assessed, by priority |
|  |  | Number of facilities identified as significant contributors of POCs              |
|  | Implement an inspection program for MSGP Permit holders based on priority                        | Number of MSGP facilities inspected, by priority                                 |
|  |  | Number of noncompliant MSGP facilities   |
|  |  | Number of repeat noncompliant MSGP facilities                                    |
|  |  | Number and type of enforcement actions   |

# Control of Floatable and Settleable Trash and Debris





NYC catch basin captures trash and debris





DEP skimmer boat collecting trash and debris from the boom

Pursuant to Part IV.I of the MS4 Permit, the City must develop a program to manage floatable and settleable trash and debris, also referred to as floatables. The MS4 Permit requires that the City:

- **Complete a study to determine the loading rate for floatables discharged from the MS4 to waterbodies listed as impaired for floatables**
- **Propose a methodology to select, site and size BMPs and controls to reduce floatables**
- **Continue to implement existing controls (e.g., DEP catch basin hooding, inspection and maintenance program).**

Consistent with prior studies conducted by DEP, the City defines floatables as manmade materials, such as plastics, papers, or other products, which, when improperly disposed of, can ultimately find their way to local waterbodies. Floatables include materials that are settleable, floatable, or are neutrally buoyant; such materials may float or sink depending on the ambient conditions to which they are subject. Floatables can create nuisance conditions for waterbody aesthetics, recreation, navigation, and ecosystems.

This chapter details the City's long-standing programs to address floatables and the study to determine the floatable loading rate from the MS4. The loading rate study, in addition to past and ongoing evaluations of the City's programs, will inform the further development of floatables management, including methods for selecting BMPs and controls.

## 9.1 Floatables Management Programs

The City has a variety of longstanding, effective programs that control floatables.

### Rules and Regulations Enforcement

The City administers a variety of rules and regulations to keep the streets clean and free of litter. These statutory controls, which help prevent floatables from reaching local waterbodies through the MS4, include prohibitions of and fines for littering and illegal dumping. The rules and regulations also require property owners to clean the sidewalks, gutters, backyard areaways and alleys surrounding their properties. DSNY enforces these rules and regulations through the DSNY Enforcement Routing Program.

Under the DSNY Enforcement Routing Program, enforcement agents patrol all areas including commercial, industrial, manufacturing, and residential blocks daily during the two specified one-hour time periods<sup>39</sup> focusing on violations for dirty sidewalks, dirty areas, and failure to clean

18 inches into the street. During these specified enforcement routing times,<sup>40</sup> enforcement agents will issue summonses for observed dirty sidewalks, dirty areas, or 18-inch violations in front of or adjacent to residential or commercial premises. While these violations are only issued during enforcement routing times, enforcement agents may issue summons for other types of violations at any time.

### Item Bans, Fees, and Deposits

The City uses item bans, fees, and deposits to help eliminate or reduce the use of certain types of items, such as single-use plastic bags and non-recyclable food service products (containers and utensils). New York State currently has a five-cent deposit, which is in effect in NYC, on a variety of bottles and jars.

<sup>39</sup> <http://www1.nyc.gov/nyc-resources/service/2455/sidewalk-cleaning-enforcement-or-sticker-request>

<sup>40</sup> Residential and vacant lot enforcement routing times citywide have been set as follows: 8:00 AM to 8:59 am and 6:00 pm to 6:59 pm; commercial/industrial/manufacturing routing times vary by district.

## Summary of Litter and Floatables Education, Outreach, and Stewardship Programs

Table 9.1

| Controls  | Responsible Agencies | Description   |
|---|----------------------|---|
| <b>Adopt-a-Bluebelt</b>   | DEP                  | DEP invites local community groups, companies, and individuals to enhance open spaces by acting as sponsors who adopt parts of the Bluebelt.  |
| <b>Harbor Protectors (formerly Adopt-a-Catch Basin)</b>               | DEP                  | DEP invites local organizations to keep their catch basins clear of debris.   |
| <b>Shoreline and Bluebelt Cleanups</b>                                | DEP                  | DEP organizes, supports, and sponsors various shoreline cleanup events throughout NYC.  |
| <b>NYC Park Stewardship</b>   | DPR                  | DPR coordinates volunteer opportunities that enable volunteers to help restore natural areas, care for street trees, clean and beautify parks, and monitor wildlife. These activities can include the care and restoration of natural areas through removal of invasive plants and floatable debris along coastlines. |
| <b>Adopt-a-Highway</b>  | DOT                  | DOT invites potential sponsors to adopt highway segments to perform litter removal and beautification.  |
| <b>Adopt-a-Basket</b>   | DSNY                 | DSNY invites local businesses or community groups to monitor and maintain local litter baskets.   |
| <b>Community Clean-ups</b>  | DSNY                 | DSNY supports local community groups and block associations in their volunteer efforts to keep their neighborhoods clean through local block and street clean-ups by offering free loans of clean-up tools and equipment.   |
| <b>311</b>  | Various Agencies     | 311 enables the public to report issues, such as heavily littered streets or clogged catch basins, which are referred to the appropriate agency for inspection and follow-up. Refer to Chapter 2: Public Education and Outreach for more information.   |
| <b>Agency Websites and social media</b>                               | Various Agencies     | Various agencies provide educational information on webpages and through outreach campaigns, which aim to improve cleanliness and aesthetics of City streets, beaches, and the harbor.  |
| <b>Trash Free NYC Waters (formerly Clean Streets = Clean Beaches)</b> | DEP, DSNY            | The City distributes educational literature, places posters, and conducts events to raise awareness of litter and floatables issues.  |

In accordance with Local Law 142 of 2013, DSNY determined that single-use food service items, such as cups and clamshells, made of expanded polystyrene cannot be recycled in a manner that is economically feasible or environmentally effective. As such, restaurants, mobile food vendors, and stores in New York City are banned from selling, using or possessing single-use food service items, including cups, trays, plates, and take-out containers and loose-fill packing “peanuts” made of expanded polystyrene foam. DSNY first made its determination that such items could not be recycled on January 1, 2015. This determination was challenged by the foam industry. However, after a revised determination was issued, the City ultimately prevailed in the litigation. The City’s ban on single-use foam food service products and local sale of foam packing peanuts went into effect on January 1, 2019.

In 2019, New York State passed the Bag Waste Reduction Law making New York State one of eight states in the country (at that time) to implement a plastic bag ban. The New York City Council subsequently approved a five-cent paper bag fee to complement the ban. In 2020, the NYS plastic bag ban went into effect, and NYC began collecting

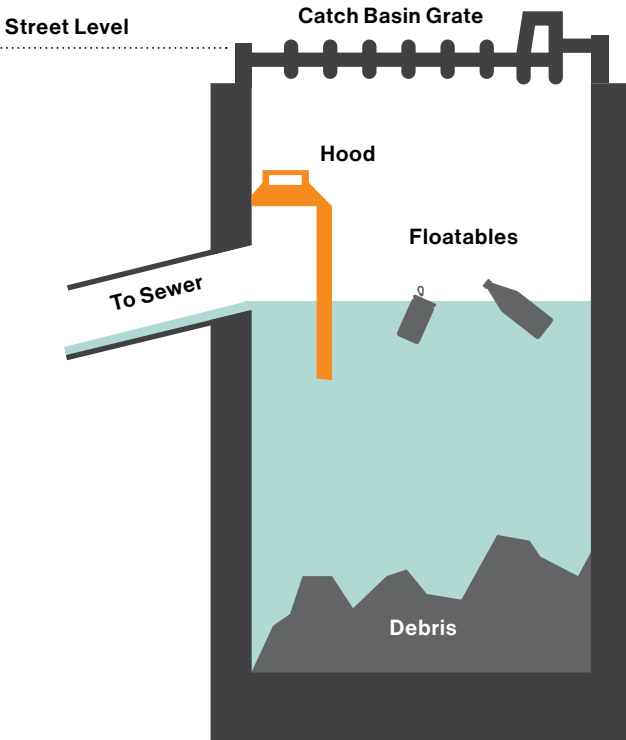
the five-cent paper bag fee. Three cents of this fee go to the State Environmental Protection Fund and the other two cents go toward the production of reusable bags. The fee and ban encourage New Yorkers to use reusable bags, reducing the number of single use bags that might end up in the environment. The New York State ban followed the City’s 2016 NYC Carryout Bag Law, which sought to impose a fee of at least five cents on all carryout merchandise bags.

In 2021, the City passed Local Law 64. Since November 1, 2021, New York City FSEs could no longer provide single-use plastic beverage straws, except upon request, and could no longer provide single-use plastic beverage stirrers. Reducing such single-use plastic helps reduce floatables and protect NYC waterways and wildlife.



DEP skimmer boat

### Catch Basin Diagram



### Public Education, Outreach, and Stewardship

The City has multiple education and outreach programs that target the issues of litter and floatables. A summary of litter- and floatable-specific programs is included in Table 9.1. See Appendix 9.2 for more information on Media Campaigns. Other education and outreach programs such as DOE’s School Sustainability Coordinator Program may also include information related to garbage and refuse. For a complete list of relevant education programs refer to Chapter 2: Public Education and Outreach.

### DEP Catch Basin Hooding, Inspection, and Maintenance Program

DEP administers a catch basin inspection, hooding, and maintenance program, which helps prevent trash and debris from reaching waterbodies. Under this program, DEP is responsible for approximately 150,000 catch basins citywide, which are regularly inspected, and if necessary, cleaned or repaired. DEP inspects all catch basins at least once every three years and in response to 311 complaints.



As of 2010, DEP installed hoods in all catch basins that DEP identified as requiring a hood. DEP replaces any missing or damaged hoods within 90 days of discovery. If a catch basin requires extensive repairs before a hood can be installed, DEP makes necessary repairs and installs a hood within 24 months.

DEP reports annually on catch basins inspected, cleaned, and repaired or re-hooded in the Combined Sewer Overflow Best Management Practices (CSO BMP) Annual Report.<sup>41</sup> DEP also reports the percent of catch basins surveyed/inspected and number of catch basins cleaned annually in the Mayor's Management Report.

### End-of-Pipe and In-Water Containment Systems

DEP operates and maintains a number of end-of-pipe/in-water controls that intercept floatables from combined and separate sewer systems. End-of-pipe/in-water controls located at the mouths of waterbodies, such as the Bronx River boom, provide a watershed-wide benefit by capturing floatables from upstream CSO and MS4 sources. As of July 2022, these controls included a total of 18 nets/booms. DEP is conducting NYSDEC-approved open water skimming operations in lieu of containment in the immediate vicinity of five sites that previously had booms/nets. DEP operates three specialized skimmer vessels that collect floatables from the booms and/or from surface waters, as needed and as feasible. DEP reports annually in the CSO BMP Annual Report on materials collected from nets/booms and open water skimming.

### DEP Bluebelt Program

The Bluebelt program preserves natural drainage corridors such as streams and ponds and optimizes them through the design and construction of stormwater controls to filter stormwater before it empties into the New York Harbor. DEP regularly inspects, maintains, and removes litter from any booms and natural areas in the Bluebelts.

The Bluebelt Program offers residents, community groups, and companies an opportunity to act as sponsors who adopt parts of the Bluebelt. DEP also sponsors "Friends of the Bluebelt" cleanup events each year and provides opportunities for groups to organize their own events. To raise public awareness, catch basins in Bluebelt drainage areas are marked with either a medallion or stamped iron curb piece to inform the public that the catch basins drain directly to local waterbodies and that nothing should be dumped into them.

41 <https://www1.nyc.gov/site/dep/water/combined-sewer-overflows.page>

### Catch Basin Marking

Catch basin markers inform the public that the catch basins drain directly to local waterbodies and that nothing should be dumped into them. DEP's current sewer design standards require that the cast iron curb pieces of new catch basins citywide be stamped with a message that reads: "Dump No Waste! Drains to Waterways." DEP also allows and facilitates catch basin stenciling with messages such as "Only Rain Down the Drain" and "This is Not a Trash Can."

### Public Litter Baskets

Litter baskets provide pedestrians with receptacles to encourage proper disposal of trash that could otherwise become street litter. DSNY services public litter baskets throughout NYC. Through the Adopt-A-Basket program, DSNY invites local businesses or community groups to monitor local litter baskets, and when baskets are three-quarters full, adopters tie up the bags, leave them next to the basket, and insert a new plastic bag liner provided by DSNY. This program helps prevent trash from spilling over or being blown by wind onto sidewalks and provides more space in the basket before the next DSNY collection.

### Street Sweeping

DSNY maintains and deploys a fleet of mechanical brooms across the five boroughs to help keep city streets clean. Street sweeping utilizing mechanical brooms addresses street litter before it can enter the sewer system. Alternate side parking regulations aid street sweeping operations. These regulations require vehicles to be moved to allow mechanical brooms accessibility for street cleaning.

DSNY mechanical broom truck



## SAFE Disposal Events and Special Waste Drop-Off Sites

DSNY hosts SAFE (Solvents, Automotive, Flammables, and Electronics) Disposal Events throughout the year in all five boroughs to help residents safely dispose of harmful household products that cannot otherwise be thrown out with regular household waste. In addition, DSNY operates five Special Waste Drop-Off Sites that accept many harmful household products. By providing ways to properly dispose of waste, DSNY discourages illegal dumping.

## Cleaning Initiatives

DSNY promotes cleaner communities through various cleaning initiatives and public partnerships such as NYC Cleanup, Precision Cleaning initiative, Work Experience and alternative sentencing programs. DSNY also participates in many City-sponsored cleanup and beautification programs such as Keep NYC Beautiful, Clean Community campaign and community clean-ups, which support local community groups and block associations by providing free loans of clean-up tools and equipment. These additional resources help DSNY maintain cleanliness throughout the city. In addition, DSNY educates residents and business owners on their responsibilities for keeping New York City clean and enforces New York City Health and Sanitation Administrative Code provisions and DSNY regulations.

## Zero Waste Initiatives

DSNY has several initiatives designed to keep recyclable and reusable materials from ending up in landfills with a goal of zero waste to landfills. These initiatives include reducing the use of plastic bags and other non-compostable waste; increasing recycling by all New Yorkers; diverting organic waste (food scraps and yard waste) to be turned into compost or renewable energy; and increasing textile and e-waste reuse and recycling. Initiatives to reduce waste all serve to reduce sources of floatables.

## Business Improvement Districts

Business Improvement Districts (BIDs) are geographical areas where local stakeholders oversee and fund the maintenance, improvement, and promotion of their commercial districts; this initiative often includes supplemental sanitation services such as litter removal and litter basket maintenance. SBS provides oversight and support to existing BIDs and to communities interested in creating new BIDs.

## Park Maintenance

DPR regularly cleans parks, playgrounds, and beaches to maintain these public spaces in clean and good condition. Additionally, DPR works closely with several groups to promote park stewardship, including removing litter from parks and other DPR properties. The Partnership for Parks, a joint program of DPR and the City Parks Foundation, works to boost community involvement in City parks. Each year it organizes numerous events including beach clean-ups, community garden maintenance, and regular litter removal activities.

## 9.2 Evaluation of Floatable Control Programs

As part of past initiatives to reduce floatables citywide, DEP has assessed many floatables control technologies and estimated the efficiency of those used in NYC. Additionally, the City continually evaluates litter and floatables conditions in NYC through several ongoing monitoring programs.

### Past Evaluations

DEP conducted various field studies to estimate the removal efficiency of various floatables controls as part of its previous Citywide Comprehensive Floatables Facility Planning Project.<sup>42</sup> DEP developed estimates based on these studies, showing that current practices, including street sweeping, catch basin hooding, end-of-pipe netting/booming/skimming operations, and combined sewage treatment at WRRFs capture or remove approximately 96 percent of citywide floatables originating from street litter.

Citywide, DEP estimated that existing street sweeping practices remove approximately 55 percent of litter from the streets. DEP also found that street sweeping removal efficiency is dependent on public adherence to alternate side parking regulations as well as on mechanical broom operations. DEP's studies indicated that, compared to no sweeping, sweeping once per week reduces floatables by approximately 50 percent, and sweeping twice per week reduces floatables by approximately 70 percent.

Citywide, DEP estimated that catch basins capture approximately 34 percent of floatables originating as street litter. This estimate reflects DEP's implementation of a citywide catch basin hooding program, which was enacted after DEP determined that the floatables-capture efficiency of each catch basin improves 70 to 90 percent when a missing hood is installed.

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<sup>42</sup> "Citywide Comprehensive Floatables Plan - Modified Facility Planning Report," prepared by HydroQual Engineers & Scientists, P.C. for the City of New York Department of Environmental Protection, Bureau of Environmental Engineering, July 29, 2005.

## Location of Floatables Monitoring Program Sites

Figure 9.1

- ◆ Harbor Survey Program Sites
- Volunteer Survey Program Sites



Citywide, DEP estimated that end-of-pipe and in-water containment systems (i.e., nets, booms, and skimming operations) capture or remove approximately 3 percent of floatables originating as street litter. The floatables capture efficiency of end-of-pipe and in-water containment systems can be 75 to 95 percent, depending upon weather conditions and operational considerations, such as properly operating tide slides (equipment that allows booms to rise and fall with the tides) and timely deployment of specialized skimmer vessels to collect floatables captured by the booms.

### Ongoing Evaluations

In addition to the past studies that evaluated the efficiency of various controls, the City has several ongoing monitoring programs to help assess trash and debris conditions. The Mayor's Office of Operations tracks street and sidewalk litter levels on a continuous basis, through the Street Cleanliness Rating program. This program visually monitors trends in street and sidewalk litter monthly throughout the City.<sup>43</sup>

DSNY monitors the Street Cleanliness Ratings as a check on trends and the effectiveness of its street cleaning operations. The rating program indirectly reduces floatables by providing DSNY with feedback to help the agency allocate its resources more efficiently.

Similarly, DEP monitors floatables in waterbodies and on beaches citywide through its Floatables Monitoring Program. The Floatables Monitoring Program utilizes visual ratings to document floatables levels at monitoring sites throughout NYC (Figure 9.2). Visual ratings collected by DEP staff through the Harbor Survey Program are supplemented by Volunteer Survey Program inspections. DEP analyzes the datasets collected by both groups and conducts source investigations at sites with the poorest ratings. DEP summarizes the results of these inspections and source investigations in its annual Floatables Monitoring Program Progress Report. Findings from the program indicate that the floatables condition is typically worse along the shoreline and that floatables tend to accumulate in tributaries and flow-restricted waterbodies.

DEP also monitors the volume of floatable materials recovered through booms, nets, and open water skimming. This information is reported in the Annual CSO BMP Report.<sup>44</sup>

43 <https://www1.nyc.gov/site/operations/performance/scorecard-street-sidewalk-cleanliness-ratings.page>

44 <https://www1.nyc.gov/site/dep/water/combined-sewer-overflows.page>



## 9.3 Loading Rate Work Plan

The 2015 MS4 Permit required the City to develop a work plan to determine the loading rate of floatable and settleable trash and debris discharged from the MS4 to waterbodies listed as impaired for floatables; NYSDEC approved the final work plan along with the SWMP on March 14, 2019 (work plan is attached as Appendix 9.1). The City commenced the Loading Rate Study in early 2021, and started data collection that spring. The 2022 MS4 Permit requires DEP to conclude the Loading Rate Study by August 1, 2025. The City reports in the MS4 Annual Reports on the status of loading rate study implementation.

As described in the final work plan, the City reviewed loading rate methodologies employed by other municipalities, as well as those used in the City's existing floatables control program. Pursuant to this review, the City selected a hybrid approach that combines field measurements and model analysis. Using this approach, the City took field measurements of floatables discharged from catch basins representing various categories of sites that comprise the MS4 area.

These datasets will then be used to extrapolate a floatables loading rate by MS4 outfall and for each waterbody designated as impaired due to floatables. In conjunction with field measurements, the City will use an updated version of DEP's existing floatables model to check the results of the field monitoring and to account for weather conditions and downstream in-water controls such as booms. In summary, the methodology detailed in the final work plan involves the following steps:

- 1 Selection of catch basins representing various categories of sites that comprise the MS4 area.** To represent the full range of factors affecting floatables generation, and interception in the MS4 area, the City selected sites representing various combinations of catchment characteristics and catch basin attributes, or a unique land use.
- 2 Field monitoring to measure floatables discharge rates from the catch basin sites into the separate storm sewer.** The City used mesh strainer baskets deployed in MS4 manholes to capture floatables discharged from catch basins to the MS4. Field crews collected samples to characterize accumulated amounts during dry periods and wet periods. Floatables collected from each site were separately sorted to remove sediment and vegetation, then quantified and recorded.

- 3 Evaluation of rainfall patterns and other conditions affecting floatables loadings.** The City plans to use long-term average rainfall patterns, typical City service levels, and typical litter generation conditions when estimating loadings from the MS4 area.
- 4 Analysis of field measurements to determine unit loading rates by site category.** The City plans to use a multivariate analysis to determine unit loading rates for catch basins based on catchment characteristics and catch basin attributes.
- 5 Application of unit loading rates (by site category) to individual catch basins, and summation of the results by MS4 outfall and by waterbody designated as impaired due to floatables.** The City plans to express floatables quantity in terms of volume and rates in terms of annual average periods.

## 9.4 Review of Available Technologies and Controls

DEP surveyed eight municipal/county entities to identify available technologies used for floatables control to determine which ones might be successful in and applicable to the NYC MS4 area. The surveyed localities were Los Angeles, Baltimore City and County, Washington D.C., San Francisco, Philadelphia, London, and Melbourne.

Initiatives used to control floatables discharge included: anti-litter laws and fines, item bans, item fees and deposits, public education and outreach activities, signage, litter basket programs, community cleanups, street sweeping, catch basin cleaning, beach and shoreline cleaning, monitoring efforts, catch basin inserts and screens, hydrodynamic separation, and end-of-pipe booms and nets. Table 9.2 summarizes the controls implemented by each municipality/county, with New York City shown for comparison at the far right.

The City is implementing, or has previously evaluated, nearly all the floatables controls that are in use in the surveyed locations. As part of its previous Citywide Comprehensive Floatables Facility Planning Project, DEP assessed more than 100 technologies to control floatables, settleable solids and/or oil and grease from combined and separate sewer areas to determine which technologies might meet the requirements of the CSO program. This assessment is a helpful resource for understanding what floatables reduction tools the City may want to expand or implement in the City's MS4 area.

## 9.5 Methodology for Selecting Technologies and Controls

Following the floatables loading rate study, as described above in Section 9.3, the City will develop a methodology to site, select, and size best management practices (BMPs) and controls to reduce floatable and settleable trash and debris.

This methodology will utilize the results of the loading rate study to identify and prioritize areas for additional controls and may consider the following factors:

- Waterbody characteristics such as listed impairments, designated uses, and physical attributes that may influence accumulation of floatables
- Neighborhood characteristics such as concentration of litter, population density, and proportion of land uses associated with high litter levels
- Existing controls such as BID initiatives, street sweeping, and booms and nets

This methodology will also rely on the review of existing technologies, described in Section 9.4, to identify practicable additional controls and may consider the following factors:

- Effectiveness of controls and any ancillary benefits such as waste reduction or cleaner communities
- Physical constraints of the site such as limited access for maintenance or space available for control
- Cost of controls including construction, operation, and maintenance

### Floatables Controls Implemented in Separate Sewer Areas

Table 9.2

| Floatables Control        | Baltimore City, MD | Baltimore County, MD | Los Angeles, CA | Melbourne, AU | Philadelphia, PA | San Francisco, CA | Washington, D.C. | London, UK | New York City, NY |
|---------------------------|--------------------|----------------------|-----------------|---------------|------------------|-------------------|------------------|------------|-------------------|
| Item Ban                  |                    |                      | ✓               |               |                  | ✓                 | ✓                |            | ✓                 |
| Item Fee/ Deposit         |                    |                      | ✓               |               |                  | ✓                 | ✓                | ✓          | ✓                 |
| Anti-Littering Laws/Fines | ✓                  | ✓                    | ✓               | ✓             | ✓                | ✓                 | ✓                | ✓          | ✓                 |
| Public Education/Outreach | ✓                  | ✓                    | ✓               | ✓             | ✓                | ✓                 | ✓                | ✓          | ✓                 |
| Litter Baskets            | ✓                  |                      | ✓               | ✓             | ✓                | ✓                 | ✓                | ✓          | ✓                 |
| Street Sweeping           | ✓                  | ✓                    | ✓               | ✓             | ✓                | ✓                 | ✓                | ✓          | ✓                 |
| Street Cleanups           | ✓                  |                      | ✓               |               | ✓                | ✓                 | ✓                |            | ✓                 |
| Curb Inlet Screen Covers  |                    |                      | ✓               |               |                  |                   |                  |            |                   |
| Catch Basin Inserts       | ✓                  |                      | ✓               |               | ✓                |                   |                  |            |                   |
| Catch Basin Hoods         |                    |                      |                 |               |                  |                   |                  |            | ✓                 |
| Catch Basin Cleaning      | ✓                  | ✓                    | ✓               |               | ✓                | ✓                 |                  |            | ✓                 |
| Hydrodynamic Separation   |                    |                      | T               |               |                  | ✓                 |                  |            | T                 |
| End-Of-Pipe Nets/Booms    | ✓                  |                      | ✓               |               |                  |                   | ✓                |            | ✓                 |
| In-Water System           | ✓                  | ✓                    | ✓               |               | ✓                |                   | ✓                | ✓          | ✓                 |
| Shoreline Cleaning        | ✓                  | ✓                    |                 | ✓             | ✓                |                   | ✓                |            | ✓                 |
| Monitoring                | ✓                  | ✓                    | ✓               |               |                  | ✓                 | ✓                |            | ✓                 |

Notation: ✓ = implemented, T = tested/testing



## 9.6 Measurable Goals and Program Assessment

Table 9.3 lists measurable goals and measures for identified Control of Floatable and Settleable Trash and Debris BMPs. MS4 Annual Reports include these measures to assess the status of each measurable goal and BMP.

Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

### Summary of BMPs, Measurable Goals and Measures for the Control of Floatable and Settleable Trash and Debris Program

Table 9.3

| Best Management Practice (BMP)  | Measurable Goals   | Measure  |
|---|--|--|
| <b>Provide a Floatable and Settleable Trash and Debris Management Program</b> | Determine Loading Rate of Floatable Trash and Debris discharged from MS4 to waterbodies impaired for floatables                                  | Status of Loading Rate Study   |
|   | Continue DEP's Catch Basin Inspection, Cleaning, and Hood Replacement Program  | Number of catch basins inspected and number cleaned                                  |
|   |  | Number of catch basin hoods installed or replaced                                    |
|   | Continue DEP's boom and netting program  | Status and location of CSO BMP Annual Report with Floatables Control Program results |
| Implement a public education program on floatables                            | List of education and outreach programs/ events and relevant metric(s) for each (e.g., number of participants, events, or materials distributed) |  |



# Monitoring





DEP staff survey the Bronx River

In accordance with Part IV.J of the MS4 Permit, the City was required to implement a monitoring program. This chapter describes the MS4 Monitoring Program, which also relies on existing programs, to satisfy the following MS4 Permit requirements:

- **Characterize and assess the quality of stormwater discharges at representative MS4 outfalls**
- **Identify sources of specific pollutants, including POCs**
- **Detect and eliminate illicit discharges, including illegal connections, to the MS4**
- **Evaluate long-term trends in receiving water quality**
- **Develop urban stormwater quality models for the MS4**

The MS4 Monitoring Program includes evaluation of impaired waters, as required under Part II.B of the MS4 Permit, and considerations for specific waterbodies, impairments, and pollutant sources. The program combines data collection from existing monitoring programs with outfall flow metering and water quality sampling.

Through the City's MS4 Outfall Monitoring effort, which began in February 2019 and was completed in June 2022, the City collected flow and water quality data at a set of MS4 outfalls during wet weather to assess the influence of land use on stormwater discharges and pollutant concentrations.

See also Chapter 5, which details the City's efforts to detect and eliminate illicit discharges.

## 10.1 Related Programs

The City has collected water quality data in New York Harbor since 1909. Today the datasets are available on the DEP website and in the annual New York Harbor Water Quality Report.<sup>45</sup> Regulators, scientists, educators, and citizens use the data to assess impacts, trends, and improvements in the water quality of the harbor. According to the City's most recent report, the harbor is cleaner now than at any time in the last 100 years.

Approximately 60 percent of New York City is served by the combined sewer system, where a single pipe carries both wastewater and stormwater to a WRRF. During times of heavy precipitation, the combined sewer system may be overwhelmed and discharge into waterbodies. This discharge is known as a combined sewer overflow (CSO). CSOs are among the largest non-MS4 contributors of POCs. Since the 1980s, the City has reduced CSOs by over 80 percent through billions of dollars of investments in projects such as sewer separation, CSO tanks that store combined flow until it can be pumped to the WRRF for treatment, sewer system upgrades, WRRF upgrades, and green infrastructure. DEP developed 11 Long Term Control Plans (LTCPs) to build on these earlier investments. These LTCPs are comprehensive evaluations of long-term solutions to reducing CSO events and contributing to water quality improvements in New York City's waterbodies. In addition, the City's stormwater management efforts under the SWMP will further contribute to this positive water quality trend by

<sup>45</sup> <https://www1.nyc.gov/site/dep/water/harbor-water-quality.page>



taking steps to reduce stormwater pollution as part of a comprehensive integrated planning approach. For more information about the City's efforts to address CSOs,<sup>46</sup> refer to the Introduction of this Plan.

The City's routine ambient water monitoring programs described below provided useful data for the development of the MS4 Monitoring Program. These monitoring programs will continue, and the City will use the data to complement the MS4 Monitoring Program.

### Harbor Survey Program

DEP and its predecessor City agencies began monitoring water quality in New York Harbor waters in 1909. Today, the Harbor Survey Program assesses changes in water quality in New York Harbor over long periods to measure the effectiveness of the City's various water pollution control programs. This program routinely measures dissolved oxygen (DO), fecal coliform, enterococci, Secchi depth (transparency), chlorophyll "A," total suspended solids (TSS), and total nitrogen (TN).

### Sentinel Monitoring Program

DEP monitors waterbodies throughout NYC for pathogens in accordance with DEP's 14 WRRF SPDES Permits. Under this program, initiated in 1998, DEP collects quarterly samples at monitoring stations. DEP compares sampling results to the NYSDEC-established water quality baseline. If sampling results are above baseline criteria, DEP initiates a mini-shoreline investigation of the adjacent shoreline to determine whether there is a contaminated dry weather discharge that would require source trackdown and abatement actions.

### Shoreline Survey

The Shoreline Survey Program is an outfall reconnaissance inventory (ORI) that identifies and characterizes shoreline outfalls in NYC. Under this program, City agencies identify the attributes and locations of their outfalls, assess outfalls for evidence of dry weather discharges, and, if necessary, initiate illicit discharge field investigations, as described in Section 5.3. The ORI will address 100% of the outfalls within the urbanized area at least once every 10 years, with reasonable progress made each year. The City must provide an updated list of outfalls to NYSDEC annually. This dataset is maintained by DEP and is publicly available through NYC Open Data.

### Field Sampling Analysis Program

The Field Sampling Analysis Program (FSAP) was a citywide synoptic sampling program with the objective of evaluating the water quality of CSO-impacted waterbodies. This program was a temporary sampling program for DEP's CSO LTCP program that targeted



Sampling in the Harlem River

wet weather events and took simultaneous water quality samples at multiple locations in a short period. DEP developed a sampling plan for each impacted waterbody to address waterbody-specific considerations. The FSAP focused on target bacteria (i.e., fecal coliform and enterococci), TSS, biochemical oxygen demand (BOD), temperature, conductivity/salinity, and DO associated with CSO and stormwater discharges.

### Beach Sampling

City bathing beaches are regulated, monitored, and permitted by the City and State. Under Article 167 of the City Health Code and Section 6-2.19 of the City Sanitary Code, DOHMH is responsible for beach surveillance and monitoring for all permitted City beaches. This monitoring includes routine enterococci measurements at beaches for compliance with water quality standards. DOHMH compiles the results of routine water quality monitoring and compliance inspections in its Annual Surveillance and Monitoring Beach Report.

### Community-Led Monitoring

Many schools, universities, citizens, scientists, recreational water users, and environmental organizations conduct their own water quality testing in NYC waterbodies. The City considers established, community-led monitoring data when evaluating long-term trends and comparisons of water quality. For example, during the development of several CSO LTCPs, organizations such as Riverkeeper, Bronx River Alliance, and the New York City Water Trail Association's Citizens Water Quality Testing Program conducted sampling and submitted data and analyses to the City.

The City reviewed this information in relation to its own analyses, noted comparisons and differences, and in some cases used it for modeling calibration processes. DEP

46 <https://www1.nyc.gov/site/dep/water/nyc-waterways.page>

compared stakeholder data with City data and provided a summary of the comparison during public meetings, on the DEP website, and in the final CSO LTCP that DEP submitted to NYSDEC. Organizations in addition to those listed above that collect long-term water quality data are encouraged to notify and provide information on their monitoring programs to DEP’s MS4 team by emailing [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov).

## 10.2 MS4 Outfall Monitoring Program

The MS4 Outfall Monitoring Program assessed pollutant contributions from stormwater runoff in the MS4 area. To support scientific conclusions about pollutant sources and water quality trends in receiving waterbodies over time, DEP commissioned a peer review of the proposed MS4 Outfall Monitoring Program to evaluate the effectiveness of the approach. In addition, DEP received feedback from public and environmental organizations such as the Stormwater Infrastructure Matters (SWIM) Coalition.

Monitoring began in February 2019 and was completed in 2022. DEP collected flow and water quality data at a set of MS4 outfalls during wet weather to assess the influence of land use on stormwater discharge and pollutant concentrations. In NYC, tidal flows influence most outfalls, with tidal waters sometimes reaching miles upstream. This influx of harbor water impedes stormwater discharges from outfalls and therefore, presents challenges for measuring stormwater impacts on receiving waterbodies. To avoid tidal influence in the sewer, DEP collected some samples from manholes upstream of the representative MS4 outfalls.

The DEP Harbor Survey and Sentinel Monitoring Programs continued concurrently with and as a complement to MS4 monitoring. DEP used data from these programs to help analyze the influence of stormwater loads in receiving waterbodies.

The objective of the land-use-based outfall monitoring is to identify potential sources of specific pollutants

and characterize and assess the quality of stormwater discharges at representative MS4 outfalls, as required by Part IV.J.1 of the MS4 Permit.

DEP will use the collected data to determine whether there is any correlation between land use type and pollutant concentrations, and to estimate pollutant loads. Understanding this correlation can be useful for identifying and implementing pollutant reduction measures for a particular land use type. Event mean concentrations (EMCs) were estimated using time-based composite samples and, in some cases, grab samples. DEP may use the outfall monitoring data to define EMCs per land use type. EMCs are used in pollutant load analysis to ensure NNI of nitrogen contributions to nitrogen-impaired waterbodies. Refer to Chapter 6: Construction and Post-Construction for more information on NNI requirements.

Pursuant to EPA stormwater sampling guidance,<sup>47</sup> consideration of land use patterns within a municipality should be a major factor in the selection of outfalls to monitor. DEP monitored outfalls that represented six land use types within NYC, as summarized in Table 10.2 below. DEP identified the outfalls and corresponding monitoring locations feasible for metering and sampling through detailed assessments of GIS land use data, sewer system delineations, and previous water quality data collection efforts and reporting. All outfalls were visited to confirm location details and accessibility. Other characteristics of selected sampling locations included:

- farthest downstream manhole or outfall pipe not influenced by tides
- no dry weather flows
- safely accessible by sampling field crews.

Monitoring occurred quarterly during qualifying rain events to allow for collection of a target number of samples per land use type. In 2020, the City determined that it would extend sampling beyond the originally stated two years and would continue to sample when feasible in order to collect the number of samples required for reliable data analysis.

<sup>47</sup> <https://nepis.epa.gov/Exec/QueryPDF.cgi/20012RVG.PDF?Dockey=20012RVG.PDF>

### Summary of MS4 Outfall Monitoring Program

Table 10.1

| Goal   | Location Sampling Sites   | Parameters   | Frequency                   |
|--|---|--|-----------------------------|
| Assess the effect of land use on stormwater discharge and pollutant concentrations | 8 MS4 outfalls representative of 6 land use types (1 mixed, 1 high-density residential, 2 low-density residential, 2 industrial, 1 open space, and 1 highway) | <ul style="list-style-type: none"> <li>• Residue</li> <li>• Pathogens</li> <li>• Nutrients</li> <li>• Metals</li> <li>• Oil and grease</li> <li>• Field in-situ</li> <li>• Flow</li> </ul> | Beginning 2/19<br>Quarterly |

## 10.3 MS4 Outfall Monitoring Program Procedures

The MS4 Outfall Monitoring Program procedures supported DEP’s characterization and assessment of the quality of stormwater discharges at representative MS4 outfalls and identification of sources of specific pollutants.

### 10.3.1 Outfall Flow

To estimate the pollutant loading from an outfall, a measurement of volumetric flow is necessary (i.e., flow × concentration = load). Because stormwater outfalls are expected to have flow only during and after rainfall events, automated flow meters were used in manholes.

DEP also used manual measuring devices when collecting samples to corroborate automated flow meter readings. Flow measurements were limited to a subset of the monitored outfalls, and DEP compared measurements to other data points or conditions including drainage area size, impervious cover, and precipitation data from the nearest City rain gauge.

### 10.3.2 Sample Collection and Field Measurements

DEP deployed crews to collect samples during qualifying rain events. DEP defined a qualifying rain event as:

- preceded by 48 hours of relatively dry weather (no storm in excess of 0.1 inch in the outfall catchment area);
- predicted at least a day in advance by weather forecasts;
- predicted by weather forecasts with 80 percent probability of occurring; and
- predicted to result in greater than 0.2 inches of rain.

Field activities included collecting grab samples for laboratory analyses (as listed below) and measuring in-field parameters such as pH, DO, temperature, and salinity. DEP collected data on storm volume and duration from the nearest or most appropriate rain gauge.

Because of shorter holding times, DEP sent samples collected for pathogen analysis via messenger to a nearby laboratory. DEP obtained pathogen and oil and grease measurements from a single grab sample. For all other parameters, DEP used time-based composite samples (samples collected after a set time period). All sampling was subject to DEP’s established quality assurance and quality control (QA/QC) procedures. DEP used the appropriate standard methods to collect QA/QC samples based on the parameters measured.

## Outfall Monitoring Locations

Table 10.2

| Target Sampling Location |               |                          | Land Uses Per MapPLUTO Overlay                           |   |                          |                     |
|--------------------------|---------------|--------------------------|--|---|--------------------------|---------------------|
| Targeted Outfall ID      | Borough       | Land Use                 | Drainage Area to Anticipated Monitoring Location (acres) | Main Land Use Types   | Main Land Use Percentage | Receiving Waterbody |
| HP-627                   | Bronx         | Open Space               | 12.4   | Open Space and Outdoor Recreation   | 86%                      | Bronx River         |
| HP-640                   | Bronx         | Mixed                    | 4.3  | Multi-Family Residential, Commercial and Office Buildings, and Public Facilities and Institutions | 83%                      | Hutchinson River    |
| NCQ-632                  | Queens        | Industrial               | 87.2   | Industrial and Manufacturing  | 63%                      | Newtown Creek       |
| OB-722                   | Staten Island | Low-Density Residential  | 45.3   | One- and Two- Family Buildings  | 68%                      | Raritan Bay         |
| OH-607*                  | Brooklyn      | Industrial               | 5.1  | Industrial and Manufacturing  | 82%                      | Gowanus Canal       |
| TI-604                   | Queens        | Highway                  | 16.4   | Highway   | 63%                      | Flushing Creek      |
| TI-633                   | Queens        | High-Density Residential | 19.1   | One- and Two- Family Buildings  | 66%                      | Little Neck Bay     |
| TI-658                   | Queens        | Low-Density Residential  | 26.0   | One- and Two- Family Buildings  | 69%                      | Little Neck Bay     |

\*OH-607 was only briefly an active sampling location because of construction and the resulting new sewer layout. NCQ-632 continued to represent the “industrial land use” type.



## Water quality sampling for wet weather monitoring programs

One of the goals of this wet weather monitoring program is to better understand the correlation between water quality samples and stormwater runoff. DEP grabs samples from inside a storm sewer pipe at a manhole or an outfall, or in a receiving waterbody when it is raining. This information is important for linking specific water quality results directly to the stormwater runoff that may be carrying and discharging pollutants. Sampling programs must identify and assess predicted rain events in advance to determine whether an event will produce enough stormwater runoff to measure, and whether there was sufficient time between storms to allow pollutants to build up between rain events.



### 10.3.3 Laboratory Analyses

DEP selected the parameters and types of laboratory analyses for the MS4 Outfall Monitoring Program based on one or more of the following criteria:

- Listed as a POC in Appendix I of the MS4 Permit
- Listed as a cause for impairment in receiving waterbodies in the Clean Water Act Section 303(d) list
- Identified as being present at representative MS4 outfalls/manholes in the DEP Supplemental Discharge Characterization Report that was prepared for the WRRF SPDES Permits
- Commonly associated with land uses within an outfall's drainage area
- Historically associated with the City's MS4 discharges based on existing monitoring programs

Since the data collected under this program were part of MS4 Permit compliance, samples were analyzed by a laboratory certified by the New York State Environmental Laboratory Approval Program (ELAP).

The MS4 Outfall Monitoring Program included sampling for the following parameters identified by existing data sources, reports, and the MS4 Permit:

- **Residue:** Total Dissolved Solids (TDS); Total Suspended Solids (TSS)
- **Pathogens:** Fecal Coliform; Enterococci
- **Nutrients:** Total Phosphorus (TP); Dissolved Phosphorus; Total Ammonia (as N); Total Kjeldahl Nitrogen (TKN as N, the sum of ammonia, and organic nitrogen); Total Nitrogen (TN, the sum of TKN, and nitrate-nitrite)
- **Metals:** Total Cadmium; Total Chromium; Total Copper; Total Lead; Total Nickel; Total Arsenic; Total Mercury; Total Zinc
- **Miscellaneous:** Oil and Grease

The parameters above include the POCs listed as the causes of impairment in the MS4 Permit except for floatables, which this Plan addresses in Chapter 9: Control of Floatable and Settleable Trash and Debris.

DEP staff samples water quality

## 10.4 Assessment of MS4 Outfall Monitoring Program

DEP began assessing the MS4 Outfall Monitoring Program approximately two years (i.e., eight quarterly sampling cycles) after monitoring began in 2019 to determine possible program improvements. DEP, in fact, extended the original target date for completion of the monitoring to account for unforeseen issues such as construction at a monitoring location, erratic rainfall patterns, etc. Assessments of, and recommended adjustments to, the MS4 Outfall Monitoring Program were provided in MS4 Annual Reports, as necessary. Assessments also included comparisons to historical City and national data, and State water quality standards, as appropriate.

## 10.5 Measurable Goals and Program Assessment

As described in Chapter 12: Recordkeeping and Reporting, the City developed a Consolidated Information Tracking System to track information required by the MS4 Permit for the Annual Report. Table 10.3 lists measurable goals and measures for identified Monitoring and Assessment of Controls BMPs. MS4 Annual Reports include these measures to detail the status of each measurable goal and BMP.

Part IV.M.4.k of the MS4 Permit requires an evaluation of SWMP effectiveness in each Annual Report, as further described in Chapter 12: Recordkeeping and Reporting. The City demonstrates SWMP effectiveness through achievement of identified measurable goals for each major component of the SWMP, including this program.

With information gained from program planning and implementation, interagency working groups, and public input, the City annually reviews its activities and control measures to identify modifications and improvements needed to maximize SWMP effectiveness. Continuing to refine and update the measurable goals allows the City to better quantify and accurately represent the effectiveness of each one.

Summary of BMPs, Measurable Goals, and Measures for the MS4 Monitoring Program

Table 10.3

| Best Management Practice (BMP) | Measurable Goals                                     | Measures  |
|--------------------------------|--|---|
| <b>Monitoring Program</b>      | Conduct wet weather sampling from outfalls/manholes  | Analysis of collected monitoring data   |
|                                | Evaluate long-term trends in receiving water quality | Analysis of 5 years of Harbor Survey data to establish baseline conditions prior to SWMP implementation (2014-2018) |
|                                | Develop urban stormwater quality models              | Report on progress  |

# Special Conditions for Impaired Waters





Coney Island Creek





Shoreline trash and debris

As described in previous chapters of this Plan, the City administers programs and practices to reduce or remove pollutants in stormwater runoff from the MS4 area draining to surface waters of the State, including impaired waters. The MS4 Permit identifies special conditions for specific impaired waterbodies:

- **Impaired waters without Total Maximum Daily Loads (TMDLs)**
- **Impaired waters with NYSDEC-approved Combined Sewer Overflow Long Term Control Plans (CSO LTCPs)**

The waterbodies in these categories will receive targeted efforts. This chapter identifies impaired waters and their POCs in the NYC area and details the City's policies and programming in addition to the SWMP that it implements for these waterbodies.

## 11.1 Impaired Waters and Pollutants of Concern

NYSDEC identifies waterbody impairments based on the NYSDEC designated use (e.g., swimming, fishing, or recreational boating). Appendix I of the MS4 Permit includes impaired waters in NYC and their POCs relevant to stormwater, as designated by NYSDEC in the approved 2018 303(d) list. Table 11.1 provides a summary of Appendix I of the MS4 Permit.

A POC is a pollutant causing the impairment of an impaired water segment listed in Appendix I. NYSDEC identified the following POCs for waterbodies in NYC:

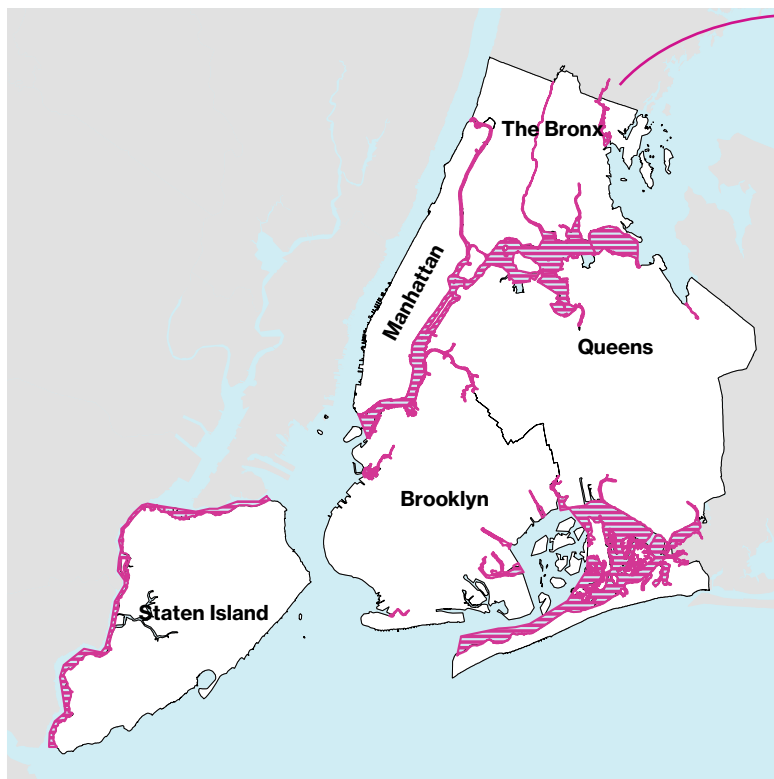
Figure 11.1

## Waterbodies Impaired for Pathogens



→ **Pathogens (Fecal Coliform)** are disease-producing agents such as bacteria, viruses, or other microorganisms. There are multiple potential sources of pathogenic bacteria in the City's recreational waters including and not limited to runoff from the MS4 area, runoff from surrounding jurisdictions, illegal sewer connections, and CSOs. Pathogens can degrade water quality and pose a risk to the local ecosystem and recreational users who may contract infectious diseases through water contact. The City has many longstanding programs to reduce pathogen pollution including a comprehensive CSO reduction program and robust IDDE efforts, as well as daily operations at NYC's 14 WRRFs.

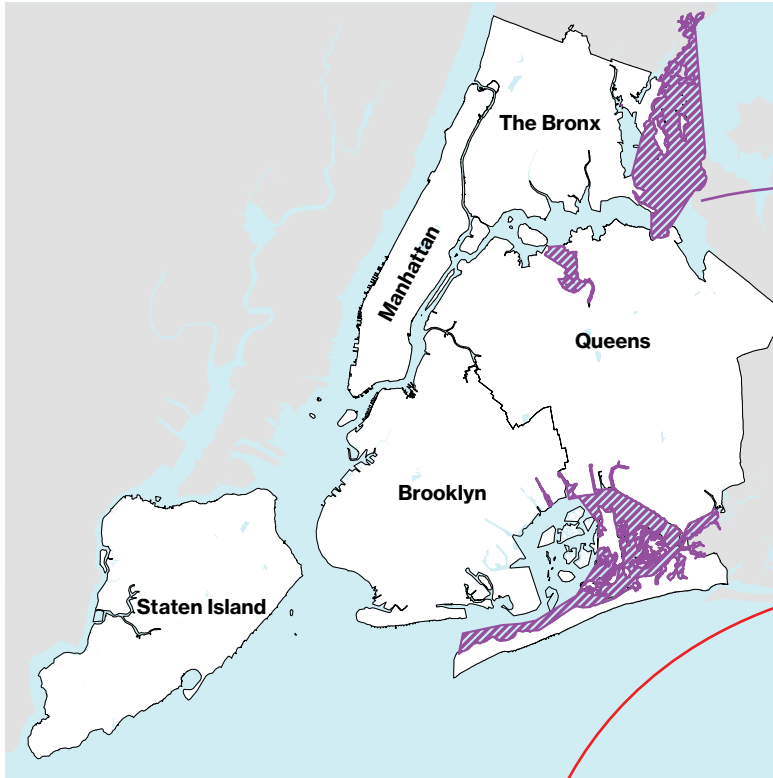
## Waterbodies Impaired for Floatables



→ **Floatables (Garbage and Refuse)** are manmade materials, such as plastics, papers, or other products which, when improperly disposed of onto streets or into catch basins, can ultimately find their way to local waterbodies. Floatables include materials that are settleable as well as those that may float on the water surface or are neutrally buoyant; such materials may float or sink depending on the ambient conditions to which they are subject. Floatables can originate from multiple sources such as stormwater runoff, CSOs, and direct disposal to the water. If washed onto beaches, floatables can pose human health risks and degrade the aesthetic value of the shoreline in and around NYC. Floatables not washed onto the shoreline also degrade the aesthetics of NYC waterbodies and can form slicks that may be a navigational hazard. Additionally, floatables threaten the health and lives of marine species and habitats. The City currently has a variety of programs in place to reduce floatables in local waterways. These are detailed in Chapter 9: Control of Floatable and Settleable Trash and Debris.



## Waterbodies Impaired for Nitrogen



Nutrients, including **nitrogen** and **phosphorus**, are natural parts of aquatic ecosystems that support the growth of algae and aquatic plants. Excess nutrients can cause nuisance algal blooms and aquatic weed growth, which reduce water clarity and dissolved oxygen (DO) and can harm aquatic life. Sources of nutrients include lawn/plant fertilizer, CSOs, WRRF effluent, illicit discharges of sanitary waste, pet and wildlife waste, and green waste such as leaves, branches, and yard clippings. The City has invested billions of dollars to reduce nitrogen in the Harbor through WRRF upgrades and CSO reduction strategies. For information on nutrient reduction at other municipal facilities and operations in MS4 areas see Chapter 7: Pollution Prevention/Good Housekeeping for Municipal Operations and Facilities.

## Waterbodies Impaired for Phosphorus



Summary of waterbodies in NYC and their listed impairments in Appendix I of the MS4 Permit at the time of issuance on August 1, 2022.

Table 11.1

| Waterbody                           | Impairment Pollutant of Concern  |                |          |            |
|-------------------------------------|----------------------------------|----------------|----------|------------|
|                                     | Garbage and Refuse <sup>48</sup> | Fecal Coliform | Nitrogen | Phosphorus |
| Bronx River                         | X                                | X              |          |            |
| Hutchinson River                    | X                                |                |          |            |
| Van Cortlandt Lake                  |                                  |                |          | X          |
| Westchester Creek                   | X                                |                |          |            |
| Coney Island Creek                  | X                                | X              |          |            |
| Gowanus Canal                       | X                                |                |          |            |
| Newtown Creek                       | X                                | X              |          |            |
| East River                          | X                                |                |          |            |
| Harlem Meer                         |                                  |                |          | X          |
| Harlem River                        | X                                |                |          |            |
| The Lake in Central Park            |                                  |                |          | X          |
| Alley Creek                         |                                  | X              |          |            |
| Little Neck Bay                     |                                  | X              |          |            |
| Flushing Creek/Bay                  | X                                | X              |          |            |
| Jamaica Bay                         | X                                | X              | X        |            |
| Kissena Lake                        |                                  |                |          | X          |
| Meadow Lake                         |                                  |                |          | X          |
| Hendrix Creek                       | X                                | X              | X        |            |
| Mill Basin                          | X                                |                |          |            |
| Paerdegat Basin                     | X                                |                |          |            |
| Prospect Park Lake                  |                                  |                |          | X          |
| Bergen Basin                        | X                                | X              | X        |            |
| Shellbank Basin                     |                                  |                | X        |            |
| Spring Creek                        | X                                |                |          |            |
| Thurston Basin                      | X                                | X              |          |            |
| Willow Lake                         |                                  |                |          | X          |
| Arthur Kill                         | X                                |                |          |            |
| Grasmere, Arbutus, and Wolfes Lakes |                                  |                |          | X          |
| Kill Van Kill                       | X                                |                |          |            |
| Newark Bay                          | X                                |                |          |            |
| Raritan Bay                         |                                  | X              |          |            |
| Atlantic Ocean Coastline            |                                  | X              |          |            |

48 NYSDEC revised term "floatables" to "garbage and refuse" and revised "pathogens" to "fecal coliform."

## 11.2 Impaired Waters without Total Maximum Daily Loads

Under Part II.B.1 of the MS4 Permit, the City must ensure NNI of the POC causing the impairment from non-negligible land use changes or changes to stormwater management practices within the MS4 area draining to the impaired waters. The City must continue to implement BMPs such as street sweeping, catch basin cleaning, etc.

The City's SWPPP review process under the Construction and Post-Construction Program requires adequate controls to ensure NNI of the POC causing impairment.<sup>49</sup> The City provides updates on the applicability of NNI requirements in the Construction and Post-Construction program section of the MS4 Annual Report.

<sup>49</sup> Refer to Chapter 6: Construction and Post-Construction for more information.



"Don't Trash Our Waters" Coney Island Aquarium event

## 11.3 Impaired Waters with NYSDEC Approved Combined Sewer Overflow Long Term Control Plans

Impaired waters with NYSDEC-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. The waterbody meeting these criteria at EDP was Coney Island Creek (CIC). Since EDP, in January 2023, DEC approved the Jamaica Bay and Tributaries LTCP. As a result, 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.

The POCs causing the impairment in CIC are **pathogens** and **floatables**. Pathogens include bacteria, viruses or other microorganisms that may be disease-producing. Bacteria found in feces is widespread in urban stormwater runoff. **Floatables**, or garbage and refuse, have many possible sources within NYC. Garbage and refuse may carry toxins and pathogens that pose a risk to human and ecosystem health. Refer to Chapter 9: Control of Floatable and Settleable Trash and Debris for more information on floatables controls.

- Identified source categories of the POCs include illicit discharges, pet waste and extensive impervious area.

### Summary of POC Source Categories and Control Measures for Coney Island Creek

Table 11.2

| Pollutant of Concern | Targeted MS4 Source Categories  | Control Measures and Projects for Coney Island Creek  |
|----------------------|---|---|
| Floatables           | <ul style="list-style-type: none"> <li>• Highly impervious area (littering)</li> </ul>      | <ul style="list-style-type: none"> <li>• Catch basin marking and stenciling</li> <li>• Source control</li> <li>• Public education and outreach</li> </ul>   |
| Pathogens            | <ul style="list-style-type: none"> <li>• Illicit discharges</li> <li>• Pet waste</li> </ul> | <ul style="list-style-type: none"> <li>• Catch basin marking and stenciling</li> <li>• Pet waste management</li> <li>• Source tracking and control</li> <li>• Sentinel Monitoring</li> <li>• Public education and outreach</li> </ul> |



## 11.4 POC Source Categories and Control Measures for CIC

Table 11.2 summarizes the targeted POC source categories and the City’s control measures for CIC.

The City addresses the POCs for Coney Island Creek by implementing several programs and projects:

- **Pet Waste Management:** DPR installed pet waste bag dispensers and signage as part of its “Forgot Your Bag?” Program, to minimize the presence of exposed pet waste in Coney Island Parks.
- **Catch Basin Marking and Stenciling:** Images and text on catch basins help inform the public that the catch basins drain directly to local waterways and that nothing should be dumped into them. As discussed in Chapter 2: Public Education and Outreach, the City is gradually installing new and replacement catch basins in the MS4 area with a “no dumping” message stamped in the iron curb piece. To complement this program in the Coney Island Creek tributary area, DEP plans to partner with other City agencies and local organizations to stencil on or attach medallions to existing catch basins. In 2021, DEP launched the Harbor Protectors Program to encourage schools and community groups to get involved in environmental clean ups and catch basin stenciling. For more information, visit DEP’s website.<sup>50</sup>
- **Signage Deployment:** DEP placed signage at key MS4 outfalls in Coney Island Creek with ID numbers and instructions on how to report dry weather discharges. This signage can help facilitate local community reporting of water quality concerns. Additionally, DEP partnered with DPR to install “No Swimming” signs at seven locations along the shoreline of Coney Island Creek. Brooklyn Community Board 13 helped identify the best locations for these signs.
- **Monitoring and Source Tracking:** As described in Chapter 10: Monitoring existing and ongoing ambient water quality monitoring programs were evaluated along with the MS4 monitoring program. Modifications to these sampling programs, which are focused on pathogens in Coney Island Creek, will increase the City’s ability to identify illicit sewage discharges. The City will continue to implement its effective IDDE Program in the Coney Island area.
- **Public Education and Outreach:** The City has prioritized Coney Island Creek for public education and outreach on pollution source controls, including pet waste management and trash management.

The City continues to engage partners such as local businesses, community groups, and other stakeholders to identify and assess the feasibility of additional opportunities to reduce POCs in stormwater runoff to Coney Island Creek. The City provides updates on the progress of each program and project in the MS4 Annual Reports.

### Opportunities for Green Infrastructure in CIC

DEP identified potential GI opportunities in Coney Island Creek MS4 areas by prioritizing City-owned sites based on their potential to capture runoff. DEP partnered with owner agencies and entities (e.g., DPR, NYCHA, DOE) to identify and evaluate the feasibility of adding GI pilot projects at these sites. GI pilot projects in the Coney Island Creek MS4 area are designed to accommodate the 90th percentile storm (1.5” of rainfall). The City plans to implement GI pilot projects at several schools in the Coney Island Creek MS4 area, depending on-site conditions and feasibility. The City reports on the progress of these GI pilot projects in the MS4 Annual Reports.

## 11.5 Identification of Additional Waterbodies

If other waterbodies are identified as meeting the criteria in the future, the City will provide in the Annual Report:

- Determination of the source categories for POCs causing impairment (e.g., fertilizer use, illicit discharges, leaf litter, pet waste, industrial areas, construction, highly impervious area)
- List of additional or customized non-structural BMPs for each control measure in Part IV.A through Part IV.I of the MS4 Permit (Chapters 2 through 9 of this Plan) and an implementation schedule
- Description of opportunities for implementing cost-effective green infrastructure (GI).



Coney Island Creek outfall signage

50 <https://www1.nyc.gov/site/dep/whats-new/harbor-protectors.page>

# Recordkeeping and Reporting





Humpback Whale in NYC Harbor



Annually, in accordance with Part IV.M of the MS4 Permit, the City prepares a report documenting the status of compliance activities related to the MS4 Permit. The reporting year for each Annual Report is the calendar year (January 1 to December 31). The City submits its MS4 Annual Reports to NYSDEC in an electronic format via email by September 30 each year.

## 12.1 Recordkeeping and Data Management

In accordance with Part IV.L of the MS4 Permit, each City agency is responsible for maintaining its own records generated in support of MS4 Permit compliance for at least five years after it generates those records. The City developed CITS for the recordkeeping and reporting, as required by the MS4 Permit.

CITS stores SWMP implementation and MS4 Annual Report information. CITS allows agencies the option to upload information and supporting documentation on their measurable goals and other annual reporting items. These records may include original paperwork, reports, electronic data and files, and other information regarding implementation of the SWMP. The City uses this information to draft MS4 Annual Reports that describe SWMP implementation and effectiveness. CITS can also serve as a resource for providing information if requested by NYSDEC or the public. The public can request information on the SWMP by emailing [MS4@dep.nyc.gov](mailto:MS4@dep.nyc.gov).

## 12.2 Annual Report Process and Schedule

The City will produce the Annual Report in four stages:

**Data Consolidation.** Agencies input data on their activities completed during the reporting year into CITS. DEP may obtain additional information through SWPTS, the Industrial and Commercial System, and additional reports prepared for other purposes. DEP then compiles the data into a draft report.

**Draft of the MS4 Annual Report.** In compliance with Part IV.M of the MS4 Permit, DEP drafts an Annual Report that summarizes the compiled data and reports and describes the implementation of the SWMP. DEP provides this draft to the agencies for internal discussion and review. The draft Annual Report generally includes a brief description of the SWMP activities completed during the reporting year, measurable goals, and specific reporting requirements included in the MS4 Permit. The draft Annual Report also includes activities planned for the next year, and, if applicable, any proposed changes to the SWMP.

### **Public Review of the Draft MS4 Annual Report.**

As described in Chapter 3: Public Involvement and Participation, the City publishes the draft Annual Report on the DEP website and presents the draft Annual Report for public questions and comments by July 1 following each reporting year, and prior to submittal of the final Annual Report to NYSDEC.

**Submittal to NYSDEC.** In accordance with Part IV.M of the MS4 Permit, once the City addresses public comments and modifies the draft report accordingly, the City submits the final Annual Report, which includes the Municipal Compliance Certification, to NYSDEC by September 30 following each reporting year and makes it available on the DEP website.

## 12.3 Monitoring and Assessment of Controls

In accordance with Part IV.M.4.k of the MS4 Permit, the City must show SWMP effectiveness by annually evaluating the appropriateness of significant BMPs, effectiveness of implementation of each major program component of the SWMP,<sup>51</sup> and progress towards achieving reduction of the discharge of pollutants to the MEP. The City has identified measurable goals and assessment indicators for each SWMP program and annually reviews its activities and controls to determine whether there may be modifications and improvements needed to maximize SWMP effectiveness. See “Measurable Goals” and “Measures” in the major program components of the SWMP, Chapters 2-10 above.

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<sup>51</sup> Public Education and Outreach, Public Involvement/Participation, Mapping, Illicit Discharge Detection and Elimination, Construction Stormwater Runoff Control, Post-Construction Stormwater Management, Pollution Prevention/Good Housekeeping for Municipal Operations/Facilities, Industrial and Commercial Stormwater Sources, and Floatable and Settleable Trash and Debris Control, Monitoring.

Baby peregrine falcon banding



# Definitions and Acronyms



# 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 of the MS4 Permit.

**Applicant:** The person filing the online application for Stormwater Construction permitting. This may be the owner, developer, qualified professional, or other person that is a registered user in the online application system (SWPTS).

**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 requirements under the MS4 permit. As such, BMPs are a sub-element of the SWMP Plan that describe the specific actions that will be taken to achieve the requirements of one or more sub-paragraphs of the SWMP Plan Element (e.g., the BMP “Identify Target Audiences for the POCs to each waterbody/ sewershed of concern” would address the requirements of paragraph IV.A.1 of the SPDES MS4 Permit).

**Better Site Design (BSD):** Better Site Design is a form of Green Infrastructure and is similar to Low Impact Development (LID). Better Site Design incorporates non-structural and natural approaches to new and redevelopment projects to reduce impacts on watersheds by conserving natural areas, reducing impervious cover and better integrating stormwater treatment.

**Bluebelt:** A Bluebelt is a collection of streams, ponds and wetlands that naturally convey, store, and filter stormwater runoff. The Bluebelt program preserves natural drainage corridors such as streams and ponds and optimizes them through the design and construction of stormwater controls to filter stormwater before it empties into the New York Harbor.

**Borough-block-lot:** Parcel numbers used to identify the location of buildings or properties.

**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 more than twice their design capacity and when this occurs, a mix of excess stormwater and untreated wastewater discharges directly into the City’s waterways at certain outfalls to prevent upstream flooding. This 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 WRRFs. During times of heavy precipitation, the combined sewer system may discharge into surface waters. See also Combined Sewer Overflow.

**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.

**Compliance Activity:** One or more specific actions taken to achieve a measurable goal, including a defined set of metrics that describe the activity.

**Development activity:** Creation of impervious surface, covered maintenance activity and/or soil disturbance on a site including but not limited to land contour work, clearing, grading, excavation, demolition, construction, reconstruction, stockpiling activities or placement of fill. Clearing activities include but are not limited to logging equipment operation, the cutting and skidding of trees, stump removal, and/or brush root removal. Such term does not include routine maintenance.

**Covered development project:** 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.<sup>52</sup> 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 area that requires a SWPPP pursuant to the New York State Department of Environmental Conservation (NYSDEC) construction general permit.

<sup>52</sup> As of February 15, 2022, USWR lowered soil disturbance threshold from 1 acre to 20,000 square feet and added trigger for permitting of creation of 5000 or more square feet of impervious surface.

**Covered Maintenance Activity:** Roadway maintenance in the municipal right of way that involves 20,000 square feet or more.

**Delineation:** Procedure by which a map or geospatial dataset is prepared that depicts a drainage area and associated discharge point.

**Developer:** A person that owns or leases land on which development activity that is part of a covered development project is occurring, and/or a person that has operational control over the development activity's construction plans and specifications, including the ability to make modifications to the construction plans and specifications.

**Direct Drainage:** Direct drainage is runoff that is discharged directly to waters of New York State without entering or passing through the MS4.

**ESRI© ArcGIS:** A company and mapping platform used to present geographical information.

**Facility:** A specific building/property where (a) an operation occurs (e.g., a municipal or commercial vehicle maintenance garage) and/or (b) the base of a unit performing an operation off-site in the field (e.g., the facility where a municipal or commercial landscape maintenance operation is based).

**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 affecting waterbody aesthetics, recreation, navigation, and ecosystems.

**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. See also Low Impact Development and Better Site Design.

**Grey Infrastructure:** Grey infrastructure typically denotes end-of-pipe controls such as floatables control, CSO retention tanks, bending weirs, or sewer modifications designed to manage stormwater. Depending on context, may also include traditional collection and conveyance and storage practices.

**Green Waste:** The vegetative portion of the waste stream arising from various sources including waste from domestic and commercial premises and municipal operation.

**Historical MS4 Map:** DEP created the Historical MS4 Map prior to MS4 permit issuance in 2015. While the Historical MS4 Map is coarse and contains some inaccuracies, it 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 area and MS4 outfalls required by the MS4 Permit. The Historical MS4 Map is no longer in use.

**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) defined by the 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 (TMDL) 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.

**Industrial Activity:** The categories of activities designated as industrial by the SPDES Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity (GP-0-17-004).

**Larger Common Plan of Development or Sale:** A contiguous area where multiple separate and distinct development activities are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation [including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) or City Environmental Quality Review (CEQR) Application, zoning request, computer design, or physical demarcation (including boundary signs, lot stakes, and surveyor markings)] indicating that construction activities may occur on a specific plot, but does not include area wide re-zonings or projects discussed in general planning documents. For discrete development projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting

road, pipeline, or utility project that is part of the same “common plan” is not concurrently being disturbed.

**Level of Potential Impact:** The actual or potential magnitude of the water quality impact presented by a certain type of pollutant-generating operation.

**Long-Term Control Plan (LTCP):** Prepared in response to a consent agreement with the US Environmental Protection Agency (EPA), and developed using the EPA CSO Control Policy, an LTCP identifies and selects appropriate CSO controls to achieve applicable NYSDEC water quality standards consistent with the Federal CSO Policy and Clean Water Act.

**Low Impact Development (LID):** A site design strategy with a goal of maintaining or replicating the predevelopment hydrologic regime through the use of design techniques to create a functionally equivalent hydrologic landscape. Hydrologic functions of storage, infiltration, and ground water recharge, as well as the volume and frequency of discharges are maintained through the use of integrated and distributed micro-scale stormwater retention and detention areas, reduction of impervious surfaces, and the lengthening of flow paths and runoff time. Other strategies include the preservation/protection of environmentally sensitive site features such as riparian buffers, wetlands, steep slopes, valuable (mature) trees, flood plains, woodlands and highly permeable soils. LID principles are based on controlling stormwater at the source by the use of microscale controls that are distributed throughout the site. This is unlike conventional approaches that typically convey and manage runoff in large facilities located at the base of drainage areas. See also Green Infrastructure and Better Site Design.

**Maximum Extent Practicable (MEP):** A technology-based standard established by Congress in the Clean Water Act §402(p)(3)(B)(iii). Since no precise definition of MEP exists, it allows for maximum flexibility on the part of the MS4 operators (i.e., the City) as they develop their programs (40 CFR 122.2; see also: Stormwater Phase II Compliance Assistance Guide EPA 833-R-00-002, March 2000). When trying to reduce pollutants to the MEP, there must be a serious attempt to comply, and practical solutions may not be lightly rejected. The City would have met the standard if it employed all applicable BMPs except those it could demonstrate, if requested, were not technically feasible in the locality, or whose cost would exceed any benefit to be derived. Accordingly, MEP requires the City to choose effective BMPs, and to reject applicable BMPs only when other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive.

**Measurable Goal:** 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. Furthermore, the goals were chosen using an integrated approach that addresses the requirements and intent of the provisions of the MS4 Permit. Goals may be qualitative or quantitative.

**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):

1. 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, flood 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;
2. designed or used for collecting or conveying stormwater;
3. which is not a combined sewer; and
4. which is not part of a Publicly Owned Treatment Works as defined at 40 CFR 122.2



**Municipal Upgrades:** For the PP/GH Program, municipal upgrades are capital projects as defined by the NYC Charter that meet the NYC Charter § 224.1 (b)(1) cost threshold.

**MS4 Area:** 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:** 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's system (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 on August 1, 2022, that defines the requirements to discharge stormwater from the City's MS4.

**No Exposure:** Used to describe facilities subject to the MSGP where all industrial materials and activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snow melt, and/or runoff.

**No Net Increase (NNI):** Special Condition II.B.1 of the NYSDEC SPDES Discharge Permit NY-0287890 (SPDES Permit) allows the City to discharge stormwater runoff from the MS4 into receiving waterbodies. Part of this Special Condition requires DEP to ensure NNI of a pollutant of concern (POC) into impaired waterbodies where that POC is causing the impairment (impaired waterbodies and POCs are identified in Appendix I of the MS4 Permit).

**NYC Stormwater Law:** Local Law 97 of 2017 provided comprehensive legislation to consolidate, clarify, and supplement DEP's existing legal authority to act in a regulatory capacity to control pollutant discharges into and from its MS4. Local Law 91 of 2020 extended to the combined sewer area DEP's legal authority to regulate land development activities.

**Off-Site Operation:** An operation performed away from the facility where the personnel performing the operation are based.

**On-Site Operation:** An operation performed at the facility where the personnel performing the operation are based.

**Performance Criteria:** One or more numeric and/or qualitative statements characterizing the desired outcome of one or more SCMs.

**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 I of the MS4 Permit, including nitrogen, phosphorus, pathogens (fecal coliform), and floatables (garbage and refuse).

**Qualified inspector:** A person who is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, a Certified Professional in Erosion and Sediment Control (CPESC), or a Registered Landscape Architect. It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years. It can also mean a person that meets the Qualified Professional qualifications in addition to the Qualified Inspector qualifications.

**Qualified professional:** A person who is knowledgeable in the principles and practices of stormwater management and treatment such as a licensed Professional Engineer, or a registered landscape architect or other NYSDEC endorsed individual(s). Individuals preparing SWPPPs that require the post- construction stormwater management practice component must understand the principles of

hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

**Regulator:** See CSO Regulator.

**Roadway Maintenance:** Work in the right of way (ROW) including milling and filling of existing asphalt pavements ("milling and paving") and replacement of concrete pavement slabs.

**Section 303(d) Listed Waters:** Section 303(d) is part of the federal Clean Water Act that requires NYSDEC to periodically prepare a list of all surface waters in the State for which beneficial uses of the water such as for drinking, recreation, aquatic habitat, and industrial use are impaired by pollutants. These are water quality-limited estuaries, lakes, and streams that fall short of state surface water quality standards and are not expected to improve within the next two years. Refer to impaired waters for more information.

**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:** A permit issued by DEP which authorizes development activity on land on which there is a covered development project with an approved SWPPP.

**Stormwater Control Measure (SCM):** An action taken to reduce the actual or potential level of impact of a pollutant-generating operation or activity.

**Stormwater Controls Working Group:** An interagency group formed in 2013 shortly after the NYC Mayor issued Executive Order Number 429. This interagency group meets quarterly or as needed to discuss all updates involving the MS4 Permit and SWMP implementation.

**Stormwater Maintenance Permit:** A permit issued by DEP under which maintenance is required of post-construction stormwater management facilities by owners of real property benefited by such facilities.

**Stormwater Management Practices (SMPs):** Measures to prevent flood damage or to prevent or reduce point source or nonpoint source pollution inputs

to stormwater runoff and water bodies. Such term includes erosion and sediment controls, post-construction stormwater management facilities, and practices to manage stormwater runoff from industrial activities.

**Stormwater Management Program (SWMP):** The suite of programs developed and implemented by the City, which provides a comprehensive integrated planning approach involving public participation and, where necessary, intergovernmental coordination, to reduce the discharge of POCs and specified pollutants to the MEP, using management practices, control techniques and systems, design and engineering methods, and other appropriate provisions. The City is required to implement and enforce a SWMP designed to address POCs and reduce the discharge of pollutants from the MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the ECL and the Clean Water Act.

**Stormwater Management Program Plan (the Plan):** The Plan used by the City to document developed, planned, and implemented SWMP elements. The Plan describes the SWMP and how the City controls pollutants in stormwater runoff.

**Stormwater Pollution Prevention Plan (SWPPP):** A SWPPP is (i) a plan for controlling stormwater runoff and pollutants during construction and, when required, after construction is completed, or (ii) when used in connection with an industrial stormwater source, a plan, which is required by the MSGP, for controlling stormwater runoff and pollutants.

**Surface Waters of the State:** Includes lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the State of New York, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Storm sewers are not waters of the State unless they are classified in 6 NYCRR Parts 800 to 941. Nonetheless, a discharge to a storm sewer is regulated as a discharge at the point where the storm sewer discharges to waters of the state. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA and ECL [other than cooling ponds as defined in 40 CFR 423.11(m) (see Section 750-1.24) which also meet the criteria of this definition are not waters of the state]. This exclusion applies only to manmade bodies of water

which neither were originally created in surface waters of the State (such as a disposal area in wetlands) nor resulted from impoundment of surface waters of the State.

**Total Maximum Daily Load (TMDL):** 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.

**Wastewater Resource Recovery Facility (WRRF):** A facility which does both wastewater treatment and resource recovery. Wastewater treatment removes pollutants from wastewater before discharge to a waterbody, and resource recovery processes solid waste for the purpose of extracting, converting to energy, or otherwise separating and preparing solid waste for reuse.

**Water Quality Standard:** Measure(s) of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

**Waterbody of Concern:** A waterbody for which either the USEPA or NYSDEC has determined that the waterbody is impaired for a pollutant of concern.

## Acronyms

|                           |  |
|---------------------------|--|
| <b>BBL</b>                | Borough, Block, and Lot                                |
| <b>BIDs</b>               | Business Improvement Districts                         |
| <b>BMP</b>                | Best Management Practice                               |
| <b>BOD</b>                | Biochemical Oxygen Demand, 5-Day                       |
| <b>CAPA</b>               | City Administrative Procedure Act                      |
| <b>CFR</b>                | Code of Federal Regulations                            |
| <b>CGP</b>                | Construction General Permit                            |
| <b>CIT System or CITS</b> | Consolidated Information Tracking System               |
| <b>COLP</b>               | City Owned and Leased Properties                       |
| <b>CPESC</b>              | Certified Professional in Erosion and Sediment Control |
| <b>CSO</b>                | Combined Sewer Overflow                                |

|                 |   |
|-----------------|---|
| <b>CWA</b>      | Clean Water Act   |
| <b>DEM</b>      | Digital Elevation Model                                 |
| <b>DO</b>       | Dissolved Oxygen  |
| <b>ELAP</b>     | Environmental Laboratory Approval Program               |
| <b>ERP</b>      | Enforcement Response Plan                               |
| <b>E&amp;SC</b> | Erosion and Sediment Control                            |
| <b>FC</b>       | Fecal Coliform  |
| <b>FSAP</b>     | Field Sampling Analysis Program                         |
| <b>GI</b>       | Green Infrastructure                                    |
| <b>GIS</b>      | Geographic Information System                           |
| <b>GPS</b>      | Global Positioning System                               |
| <b>HEM</b>      | Hexane Extractable Material                             |
| <b>I/C</b>      | Industrial/Commercial                                   |
| <b>IDDE</b>     | Illicit Discharge Detection and Elimination             |
| <b>IPIS</b>     | Integrated Property Information System                  |
| <b>IPM</b>      | Integrated Pest Management                              |
| <b>IPP</b>      | Industrial Pretreatment Program                         |
| <b>LDCs</b>     | Local Development Corporations                          |
| <b>LiDAR</b>    | Light Detection and Ranging                             |
| <b>LTCP</b>     | Long-Term Control Plan                                  |
| <b>MCM</b>      | Minimum Control Measure                                 |
| <b>MEP</b>      | Maximum Extent Practicable                              |
| <b>mL</b>       | Milliliter  |
| <b>mg</b>       | Milligram   |
| <b>MOU</b>      | Memorandum of Understanding                             |
| <b>MS4</b>      | Municipal Separate Storm Sewer System                   |
| <b>MSGP</b>     | Multi-Sector General Permit                             |
| <b>NICE</b>     | Neighborhood Intensive Cleanup Effort                   |
| <b>NOI</b>      | Notice of Intent  |
| <b>NOT</b>      | Notice of Termination                                   |
| <b>NPDES</b>    | National Pollutant Discharge Elimination System         |
| <b>NYC</b>      | New York City   |
| <b>NYCRR</b>    | New York Code of Rules and Regulations                  |
| <b>NYS</b>      | New York State  |
| <b>NYSDEC</b>   | New York State Department of Environmental Conservation |
| <b>ORI</b>      | Outfall Reconnaissance Inventory                        |
| <b>PACP</b>     | Pipe Assessment Certification Program                   |



|              |   |
|--------------|---|
| <b>PAHs</b>  | Polycyclic Aromatic Hydrocarbons                      |
| <b>PLUTO</b> | Primary Land Use Tax Lot Output                       |
| <b>POC</b>   | Pollutant of Concern                                  |
| <b>PPE</b>   | Personal Protective Equipment                         |
| <b>PP/GH</b> | Pollution Prevention/Good Housekeeping                |
| <b>QC</b>    | Quality Control                                       |
| <b>RCNY</b>  | Rules of the City of New York                         |
| <b>ROW</b>   | Right-of-Way  |
| <b>SAFE</b>  | Solvents, Automotive, Flammables, and Electronics     |
| <b>SARA</b>  | Superfund Amendments and Reauthorization Act          |
| <b>SCM</b>   | Stormwater Control Measure                            |
| <b>SIC</b>   | Standard Industrial Code                              |
| <b>SLR</b>   | Scorecard Litter Rating                               |
| <b>SMPs</b>  | Stormwater Management Practices                       |
| <b>SOP</b>   | Standard Operating Procedure                          |
| <b>SPDES</b> | State Pollutant Discharge Elimination System (NYSDEC) |
| <b>STEM</b>  | Science, Technology, Engineering & Mathematics        |
| <b>SWMP</b>  | Stormwater Management Program                         |
| <b>SWPPP</b> | Stormwater Pollution Prevention Plan                  |
| <b>SWPTS</b> | Stormwater Permitting and Tracking System             |
| <b>TDS</b>   | Total Dissolved Solids                                |
| <b>TKN</b>   | Total Kjeldahl Nitrogen                               |
| <b>TMDL</b>  | Total Maximum Daily Load                              |
| <b>TN</b>    | Total Nitrogen  |
| <b>TP</b>    | Total Phosphorus                                      |
| <b>TSS</b>   | Total Suspended Solids                                |
| <b>USEPA</b> | United States Environmental Protection Agency         |
| <b>WCS</b>   | Wildlife Conservation Society                         |
| <b>WQv</b>   | Water Quality Volume                                  |
| <b>WRRF</b>  | Wastewater Resource Recovery Facility                 |

## New York City Departments and Agencies

|                     |   |
|---------------------|---|
| <b>DCAS</b>         | Department of Citywide Administrative Services              |
| <b>DCP</b>          | Department of City Planning                                 |
| <b>DDC</b>          | Department of Design and Construction                       |
| <b>DEP</b>          | Department of Environmental Protection                      |
| <b>BEC</b>          | Bureau of Environmental Compliance                          |
| <b>BEDC</b>         | Bureau of Engineering Design and Construction               |
| <b>BEPA</b>         | Bureau of Environmental Planning and Analysis               |
| <b>BLA</b>          | Bureau of Legal Affairs                                     |
| <b>BPAC</b>         | Bureau of Public Affairs and Communications                 |
| <b>BPS</b>          | Bureau of Police and Security                               |
| <b>BWS</b>          | Bureau of Water Supply                                      |
| <b>BWSO</b>         | Bureau of Water and Sewer Operations                        |
| <b>BWT</b>          | Bureau of Wastewater Treatment                              |
| <b>CMS</b>          | Compliance Monitoring Section                               |
| <b>CSI</b>          | Collections System Investigation (formerly known as CMOM)   |
| <b>DERTA</b>        | Division of Emergency Response and Technical Assessment     |
| <b>ERU</b>          | Emergency Response Unit                                     |
| <b>DOB</b>          | Department of Buildings                                     |
| <b>DOC</b>          | Department of Correction                                    |
| <b>DOE</b>          | Department of Education                                     |
| <b>DOHMH</b>        | Department of Health and Mental Hygiene                     |
| <b>DOITT</b>        | Department of Information Technology and Telecommunications |
| <b>DOT</b>          | Department of Transportation                                |
| <b>DPR or Parks</b> | Department of Parks and Recreation                          |
| <b>DSNY</b>         | Department of Sanitation                                    |
| <b>EDC</b>          | Economic Development Corporation                            |
| <b>FDNY</b>         | Fire Department   |
| <b>LAW</b>          | NYC Law Department  |
| <b>NYPD</b>         | Police Department   |
| <b>SWCD</b>         | Soil and Water Conservation District                        |
| <b>SBS</b>          | Small Business Services                                     |

### Mayoral Offices

|              |   |
|--------------|---|
| <b>OMB</b>   | Mayor's Office of Management and Budget             |
| <b>MOCEJ</b> | Mayor's Office of Climate and Environmental Justice |
| <b>MOO</b>   | Mayor's Office of Operations                        |

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SPDES Number: NY-0287890  
Revised January 20, 2023







Appendix 1.1

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# Enforcement Response Plan

Appendix 1.2

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# Deliverables in the NYC MS4 Permit and Schedule

# Enforcement Response Plan (ERP)

## Introduction

### Purpose

The New York State Department of Environmental Conservation (DEC) issued a Municipal Separate Storm Sewer System (MS4) permit to the City of New York on August 1, 2015, pursuant to the federal Clean Water Act. The purpose of the MS4 permit is to manage urban sources of stormwater runoff to protect the overall water quality and improve water quality in impaired waters.

As required by Part III.C of the permit, the City must develop an enforcement response plan (ERP), which sets out the potential responses to violations, as needed to achieve compliance with the following programs (Permit Parts IV.D, IV.E, IV.F and IV.H, respectively):

- (1) Illicit Discharge Detection and Elimination (IDDE);
- (2) Construction Site Stormwater Runoff Control;
- (3) Post-Construction Stormwater Management; and
- (4) Industrial and Commercial Stormwater Sources..

This document describes the City's enforcement response protocol for investigating, documenting and enforcing against illicit discharges and potential illicit discharges into the MS4 as well as violations of MS4-related rules and regulations, in order to ensure compliance with the City's MS4 permit. As the NYC Department of Environmental Protection (DEP) will administer the above-referenced programs on behalf of the City, it will implement this plan in cooperation with other city agencies, including the Environmental Control Board (ECB), and the Departments of Buildings (DOB), Small Business Services (SBS) and City Planning (DCP).

### Approach

DEP has based its approach on progressive enforcement, as required by the permit Part III.C.1, addressing "persistent non-compliance, repeat or escalating violations, or incidents of major environmental harm" through "progressively stricter responses," taking into consideration the violator's responsiveness and history of violations as well as the severity and type of violation. Enforcement responses include verbal warnings, written notices of non-compliance (NON), written notices of violation (NOVs or summonses), citations with civil and administrative penalties, criminal penalties, stop work orders, cease and desist orders, and withholding of plan approvals or permits.

## Definitions

**Authorized Inspection Agent.** The term “authorized inspection agent” means an individual authorized pursuant to a contract entered into by DEP to conduct inspections on behalf of DEP.

**Chronic Violator.** The term “chronic violator” means a person or facility that has continuing or repeated violations of the applicable stormwater requirements.

**Commissioner’s Order.** The term “Commissioner’s Order” means any order issued by the Commissioner of Environmental Protection that may be necessary for the enforcement of the rules for use of and discharges to the MS4.

**Covered development project.** The term “covered development project” means development activity that involves or results in an amount of soil disturbance within the MS4 area greater than or equal to one acre. Such term includes development activity that is part of a larger common plan of development or sale involving or resulting in soil disturbance within the MS4 area greater than or equal to one acre or as established pursuant to these rules. Such term shall include all development activity within the MS4 area that requires a SWPPP pursuant to the New York State Department of Environmental Conservation (NYSDEC) construction general permit.

**Department (DEP).** The term “Department” or “DEP” means the New York City Department of Environmental Protection.

**Industrial stormwater source.** The term “industrial stormwater source” means any premises or facility that is subject to the MSGP.

**Multi Sector General Permit (MSGP).** The term “MSGP” means the NYSDEC State Pollutant Discharge Elimination System (SPDES) Industrial Stormwater Multi-Sector General Permit (MSGP), GP-0-17-004 or its successor, which covers discharges of stormwater to surface waters of the state from industrial activities.

**Notice of Non-Compliance (NON).** The term “NON” means a warning that a condition exists or an activity is being conducted that violates or may violate the rules for use of and discharges to the MS4.

**Notice of Intent (NOI).** The term “Notice of Intent” or “NOI” means the document submitted to NYSDEC to obtain coverage under the NYSDEC construction general permit or the MSGP.

**Notice of Termination (NOT).** The term “Notice of Termination” or “NOT” means the document submitted to NYSDEC to terminate coverage under the NYSDEC construction general permit or the MSGP.

**Notice of Violation (NOV).** The term “Notice of Violation” or “NOV” means a civil summons returnable before the ECB.

**NYSDEC Construction General Permit (CGP).** The term “Construction General Permit” or “CGP” means the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, GP-0-15-002 or its successor. The owner or developer of a construction project that will involve soil disturbance of one or more acres of soil must obtain coverage under the CGP before commencing any construction activity.

**Stormwater Construction Permit.** The term “Stormwater Construction Permit” means a permit issued by the Department authorizing development activity on land on which there is a covered development project in accordance with an approved stormwater pollution prevention plan (SWPPP).

**Stormwater Maintenance Permit.** The term “Stormwater Maintenance Permit” means a permit issued by DEP where maintenance of post-construction stormwater management facilities by owners of real property is required.

**Stormwater Pollution Prevention Plan or SWPPP.** The term “stormwater pollution prevention plan” or “SWPPP” means (i) when used in connection with a covered development project, a plan for controlling stormwater runoff and pollutants during construction and, where required by DEP’s rules, after construction is completed, or (ii) when used in connection with an industrial stormwater source, a plan, which is required by the MSGP, for controlling stormwater runoff and pollutants.



## Identifying/Investigating Noncompliance

The City may become aware of stormwater non-compliance or violations in a number of ways. Permit-required inspections or monitoring may reveal non-compliance: the City's programs include periodic or complaint-based compliance inspections of facilities subject to Construction/Post-Construction and Industrial/Commercial programs and routine monitoring and inspections to support the IDDE program (as authorized by Ad Code §24-524(k) and Ad Code

§24-589), as required by the MS4 permit and DEP's WWTP SPDES permits. Staff of other city agencies may also identify illicit connections or illicit discharges during the course of performing their regular job functions. Finally, there may be complaints from the public. This section discusses the City's plans for inspections in each of the three regulatory programs required by the MS4 permit: IDDE, Construction/Post-Construction, and Industrial/Commercial.

### IDDE

DEP may receive a complaint concerning an illicit connection or discharge through the City's 311 system or DEP may observe an illicit discharge during the course of operation. When one of these mechanisms triggers an IDDE investigation, DEP conducts appropriate in-sewer and/or aboveground inspection(s) to identify the source of dry weather discharge/POCs entering the MS4, consistent with applicable law, and takes necessary enforcement action to require abatement

of the discharge. When another City agency identifies an illicit connection or discharge on their property, the agency is responsible for tracking, eliminating, and reporting it.

### Construction/Post-Construction

The MS4 permit Parts IV.E.1(h) and (i) and IV.F.1(g) require DEP to address stormwater runoff to the MS4 from new construction activities and new development and redevelopment projects that result in soil disturbance of 1 acre or more. DEP inspects sites that have received SWPPP approval and permits under the DEP MS4 construction/post-construction permitting, inspection and enforcement program.

With respect to projects covered by the CGP with an active NOI at the time of SWMP approval and under active construction, DEP performs inspections triggered by complaints to DEC or the City, and refers violations to DEC for enforcement action. Other inspections in response to complaints may identify projects that are not covered by the CGP but may require coverage; these projects will also be referred to DEC for follow-up action.

With respect to Covered Development Projects, DEP uses announced and unannounced inspections, in accordance with applicable law, to determine whether projects have obtained appropriate permits under DEP's program and are complying with their SWPPPs. DEP prioritizes inspection sites that are most likely to have an adverse impact on water quality, based on the amount of exposed soil, the location of the site relative to a water body and the past performance of the responsible parties.

With respect to developed sites, DEP performs inspections based on complaints of discharges entering City sewers. Following the completion of construction, DEP performs, on a complaint basis and periodically, compliance verification inspections of sites with NYC stormwater maintenance permits to determine whether the owners are complying with their Stormwater Maintenance Permits and maintaining their stormwater facilities.

### Industrial Stormwater Sources

The MS4 permit Part IV.H.3 requires the City to inspect facilities subject to the MSGP for stormwater discharges from industrial activities. Those facilities are prioritized for inspection according to the following criteria that characterize their potential for POC discharges or other water quality impacts to impaired waters: POC discharges to impaired waters; nature of on-site pollutant sources; proximity to a waterbody; violation history of the facility; and inspection reports and sampling results. DEP inspects "high" priority facilities annually; "medium" priority, at least once every three (3) years; and "low" priority at least once every five (5) years. DEP re-inspects within one year, facilities that receive a written violation.

Facility inspection will include review of the facility's compliance with its SWPPP. Non-compliance with the provisions of the SWPPP may result in enforcement action.

## Enforcement Responses

The City has the legal authority to utilize any combination of the following enforcement measures, and to escalate enforcement responses when necessary:

- 1 Verbal Warnings are “consultative” in nature and specify the non-compliance and required corrective action.
- 2 Written Notices explain the nature of the violation and a deadline for taking corrective action.
  - » Commissioner’s Orders (Ad Code §24-524(a) and Ad Code §24-581)
  - » NONs with Commissioner’s Order
  - » NOVs that can incur civil penalties ((Ad Code §24-524(f) and Ad Code §24-585)) and may be accompanied by Commissioner’s Orders that require cleanup and/or abatement of discharges,
- 3 DEP may issue stop work orders for construction/post-construction (Ad Code §24-558(a)), when DEP finds that development activity is in violation of chapter 5-a of the Administrative Code, DEP’s implementing rules, the permit and/or the SWPPP and that the specified work being performed has or could have an effect on the discharge of pollutants, stormwater runoff volume or stormwater runoff velocity. In such a case, the specific work must cease (except work authorized or required by the Commissioner to ensure public safety or to stabilize the construction site, such as activities directed at cleaning up, abating discharge, and installing appropriate control measures).
- 4 Cease and Desist Orders – DEP (Ad Code §24-524(b) and Ad Code §24-582(a)) and ECB (Ad Code §24-524(d) and Ad Code §24-583(a))
- 5 Halting or preventing a discharge (e.g., by terminating water supply to a facility) (Ad Code §24-582(c) and Ad Code §24-583(b))
- 6 Withholding plan approvals or revoking a permit (construction/post-construction) (Ad Code §24-557)
- 7 Assessing recovery and remediation costs (Ad Code §24-524(h) and Ad Code §24-587)
- 8 Criminal penalties (DEP may refer to DA or federal prosecutors for prosecution) (Ad Code §24-524(g) and Ad Code §24-586).

### Responsibilities of Enforcement Personnel

Employees of DEP and Authorized Inspection Agents have the following responsibilities:

- Reviewing, investigating, and tracking instances of noncompliance;
- Identifying suspected violations during facility inspections and sampling activities;
- Determining appropriate enforcement responses and ensuring timely action;
- Issuing verbal warnings, Orders, NOVs (with recommended penalties), and compliance schedules.

### Overview of Enforcement Responses

Enforcement personnel consider a number of factors when determining the proper enforcement response:

- Severity of the violation, including duration, type of pollutant and quantity of pollutants,
- Effect of the violation on receiving water or public health and safety,
- Effect of the violation on City infrastructure, and
- Violator’s history of violations and enforcement actions.

All enforcement responses will specify the nature of the violation and the required corrective action as well as a deadline for completing that action. In some instances, DEP may initially issue a verbal warning or an NON, which may be accompanied by a Commissioner's Order. When there is continued non-compliance or the violator fails to timely take corrective action, DEP will respond with more severe enforcement responses such as civil summonses with fines and Commissioner's Orders.

When a condition exists in violation of the relevant provisions of the Administrative Code or DEP's implementing rules or orders, and such condition creates or may create an imminent danger to the sewer system or to the public health or to the life or safety of persons, the Commissioner may issue a cease and desist order. If there is continued or knowing violation of the relevant provisions of the Administrative Code or ECB's implementing rules or orders, or if ECB finds

that the violation presents or may present a danger to the environment or threatens to interfere with the operation of the sewer system, ECB, after notice and the opportunity for a hearing, may issue a cease and desist order. If an entity does not comply with an order issued by DEP or ECB within the time specified, DEP may act to halt or prevent such discharge by:

- 1 sealing, blocking or otherwise inactivating any equipment, facility, or device;
- 2 terminating the water supply to the premises;
- 3 sealing, blocking or otherwise inactivating any private sewer or drain emptying directly or indirectly into the sewer system; or
- 4 any other means or method that is reasonable under the circumstances.

In addition, failure to comply with a Cease and Desist Order may result in the NYC Corporation Counsel's maintaining an action to compel compliance with or restrain by injunction the violation of the Order (Ad Code §24-524(e) and Ad Code §24-584).

Any violation of the Administrative Code, Rules or an Order may result in a summons with civil penalties not to exceed \$10,000 for each violation (each day of a continuing violation constitutes a separate offense). The City may issue follow-up summonses with escalating fines. Continued and knowing violation of the Administrative Code, Rules or an Order may result in referral for criminal investigation. In addition, for any violation of the Administrative Code, Rules or an Order, an entity may be liable to the City for any expense (e.g., costs for response, remediation and emergency services) or any other loss or damage suffered by the City by reason of such violation.

### **Illicit Discharge Detection and Elimination (IDDE)**

The MS4 permit Part IV.D requires NYC to develop, implement and enforce a program to detect and eliminate illicit discharges and illicit connections to the MS4. Working within the parameters of the MS4 permit, section 24-520.1 of the Administrative Code prohibits any direct or indirect discharge into the MS4 that is not composed entirely of stormwater, except "allowable non-runoff," as defined in DEP's rules. DEP's rules define "allowable runoff" as non-stormwater discharges associated with firefighting activities or as otherwise authorized by the Commissioner and provide a process by which a discharger may obtain approval for a non-stormwater discharge, consistent with the permit's requirements. Enforcement against an entity responsible for an unauthorized non-stormwater discharge that the DEP Commissioner has not approved will be subject to enforcement as delineated in Section IV.B above and penalties as delineated in 48 RCNY section 3-123.

### **Construction Site Stormwater Runoff Control and Post-Construction Stormwater Management**

MS4 permit Parts IV.E and F require NYC to develop, implement and enforce a program, which addresses stormwater runoff from construction activities on new development and redevelopment projects that result in a land disturbance of greater than or equal to one acre.

DEP requires a Stormwater Construction Permit for any development activity on a covered development project located in the MS4 area, and a Stormwater Maintenance Permit for a covered development project that requires a SWPPP that includes post-construction stormwater management facilities.



## Appendix 1.1

### Enforcement Response Plan

Generally, enforcement proceeds as detailed above in Section IV.B. However, an additional measure available to DEP under the Construction/Post-Construction program is the Stop Work Order.

### Industrial and Commercial Stormwater Sources

The MS4 Permit requires NYC to address stormwater discharges from industrial sources in the separately-sewered portions of the City. The permit also requires NYC to inspect other facilities, including commercial entities, to determine whether they generate significant contributions of pollutants to stormwater discharges.

DEP will maintain and update every 5 years an inventory of all industrial and commercial facilities that could discharge pollutants of concern in stormwater to the MS4. DEP will inspect the MSGP-permitted facilities to determine whether they are complying with the MSGP and their SWPPPs.<sup>1</sup> The MS4 permit requires the City to conduct enforcement activities as necessary to require compliance with the MSGP.

Generally, enforcement proceeds as detailed above in Section IV.B. However, an additional measure available to DEP under the Construction/Post-Construction Program is the Stop Work Order.

## Enforcement Tracking

As required by Part III.C.2 of the MS4 permit, DEP tracks instances of noncompliance through an online database. The database documents the following:

- Name of owner/operator of facility or site of violation
- Location and type of stormwater source (i.e., construction project, industrial facility)
- NOV number or case identification number
- Description of violation
- Required schedule for returning to compliance
- Description of enforcement response used, including escalated responses if repeat violations occur or violations are not resolved in a timely manner
- Accompanying documentation of enforcement response (e.g., notices of non-compliance, notices of violation)
- Any referrals to different Departments or agencies
- Date violation was resolved

## Recidivism Reduction

DEP will identify chronic violators of applicable stormwater requirements in order to reduce the rate of non-compliance recidivism. The MS4 permit defines a “chronic violator” as a “person or facility that has continuing or repeated violations of the applicable stormwater requirements.”

DEP documents inspection results for these chronic violators and implements an increased inspection frequency or other disincentives. Examples of these measures include summonses with fines (up to \$10,000 per day per violation), cease and desist orders, referral for civil action, and/or referral for criminal investigation.

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<sup>1</sup> DEP will also inspect unpermitted industrial and commercial facilities in the inventory to provide NYSDEC the data necessary to determine whether such facilities require MSGP permitting or an individual SPDES permit

## **Abbreviations**

DEC: New York State Department of Environmental Conservation

DEP: New York City Department of Environmental Protection

ECB: Environmental Control Board

ERP: Enforcement Response Plan

IDDE: Illicit Discharge Detection and Elimination

MS4: Municipal Separate Stormwater Sewer System

MSGP: Multi-Sector General Permit

NON: Notice of Non-Compliance

NOV: Notice of Violation

OATH: Office of Administrative Trials and Hearings

SPDES: State Pollutant Discharge Elimination System

SWPPP: Stormwater Pollution Prevention Plan

## Appendix 1.2

### Deliverables in the NYC MS4 Permit and Schedule

| Deliverables in the NYC MS4 Permit and Schedule   |   |          |
|---|---|----------|
| Deliverable   | Permit Schedule                           | Status   |
| <b>II.B Impaired Waters</b>   |   |          |
| <b>III.B. Requirement to Maintain Adequate Legal Authority to Implement and Enforce Stormwater Management Program</b>   |   |          |
| Recertification of legal authority to implement and enforce the most current version of the technical standard for all activities characterized by this Permit  | 8/31/2022                                 | Complete |
| <b>IV. C MS4 Drainage Map</b>   |   |          |
| Updated MS4 Drainage Map (Part IV.C.2)  | 8/1/2027                                  | Ongoing  |
| <b>IV.D Illicit Discharge Detection and Elimination</b>   |   |          |
| Development of an IDDE Plan in accordance with the “Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments” (Center for Watershed Protection and Robert Pitt, October 2004) for Department review and approval. (Part IV.D.1) | 2/1/2023                                  | Complete |
| Updated list of IDDE points of contact for each agency  | 8/1/2022 and annually thereafter          | Complete |
| Illicit discharge track down and abatement (Phase I) schedule (Part IV.D.5)   | Within 30 days of discovery of discharge  | Ongoing  |
| Illicit discharge abatement completion (Phase II) (Part IV.D.5)   | On or before end date of Phase 1 schedule | Ongoing  |
| Report of the location and ownership of illicit discharges to the MS4 discovered, and a schedule to eliminate those discharges, as necessary; the annual report must also include information on unauthorized non- stormwater discharges (Part IV.D.6.d)                                | 2/28/2023 and annually thereafter         | Ongoing  |
| <b>IV.F Post-Construction Stormwater Management</b>   |   |          |
| Updated inventory of post-construction stormwater management practices within the MS4 storm sewershed area (Part IV.F.1.e)  | 8/1/2023 and annually thereafter          | Ongoing  |
| <b>IV. H Industrial and Commercial Stormwater Sources</b>   |   |          |
| Updated inventory of industrial/commercial facilities that are possible sources (Part IV.H.1.a.i)   | Annually                                  | Ongoing  |
| Certification that training to inspectors to conduct industrial stormwater facility inspections has been completed (Part IV.H.4)  | 3/14/2023 and every two years thereafter  | Ongoing  |
| <b>IV.I Floatable and Settleable Trash and Debris Control</b>   |   |          |
| Completion of loading rate study  | 8/1/2025                                  | Ongoing  |
| Proposal of methodology for selecting, sizing, and siting the best management practices and controls that will be implemented to reduce floatable and settleable trash and debris for Department review and approval, following completion of the loading rate study.                   | 7/31/2027                                 | Ongoing  |



**Appendix 1.2**  
Deliverables in the NYC MS4 Permit and Schedule

| <b>IV.J Monitoring</b>   |  |         |
|--|--|---------|
| Outfall monitoring data analysis (Part IV.J.1)   | 6/30/2023  | Ongoing |
| Baseline analysis of Harbor Survey data from the five years prior to SWMP implementation (Part IV.J.2)   | 8/1/2024   | Ongoing |
| Interim report updating progress towards completion of the urban stormwater quality models (Part IV.J.3) | 8/1/2024 and annually thereafter                       | Ongoing |
| <b>IV.M, IV.N, &amp; IV.O Annual Reporting and Assessment of Controls</b>                                |  |         |
| Public presentation of draft annual report (Part IV.B.4.a)   | Every July 1st after every annual reporting year       | Ongoing |
| Annual Report submission (Part IV.M) and MCC Form (Part IV.N)  | Every September 30th after every annual reporting year | Ongoing |
| Application for Permit Renewal (Part IV.O)   | 180 days prior to permit expiration                    | Ongoing |

# 311 Complaints related to MS4/ Stormwater Management Issues

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](http://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 general public as open data online.

Currently, the public is able to 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::

- [Fire Hydrant Complaint](#) - Report a hydrant that is leaking, running damaged, missing, or being used inappropriately.
- [Street Flooding](#) - Report street flooding.
- [Highway Flooding](#) - Report water flooding on a highway.
- [Manhole Flooding](#) - Report a manhole that is overflowing.
- [Water Leak Complaint](#) - Report water leaking into a public area.
- [Water Main Break](#) - Report a possible water main break.
- [Water Wasting Complaint](#) - Report the use of too much water.
- [Waterway Complaint](#) - Report debris, trash, oil, gasoline, sewage, or an unusual color in a waterway.
- [Dry Weather Sewage Discharge Complaint](#) - Report of 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.
- [Sewer Backup](#) - Report a sewer backup or get information about cleaning up after a flood.
- [Sewer Backup or flood clean-up](#) - New York City provides information about how to clean a home after a flood or sewage overflow.
- [Broken Sewer Line Complaint](#) - Report a damaged sewer line.
- [Sewer Odor](#) - Report a smell coming from a catch basin or sewer.



## Appendix 2.1

### 311 Complaints related to MS4/Stormwater Management Issues

- [Oil Spill](#) - Report an automotive, heating, or industrial oil spill.
- [Chemical Complaint](#) - Report chemical odor or chemicals that are abandoned, not stored safely
- [Chemical Spill](#) - Report a spill of chemicals or other hazardous material on a street, highway, sidewalk or indoors.
- [Pesticide Use Without Notification Complaint](#) - Report a person or business that uses pesticide without giving advance notice.
- [Pigeon Droppings or Odor Complaint](#) - Report pigeon waste or odor for sidewalks and private property.
- [Dog or Animal Waste Complaint](#) - Report property that is unclean due to animal waste.
- [Bag of Garbage or Debris in Street Complaint](#) - Report a stray bag of garbage or loose debris in a driving or biking lane of a street.
- [Dirty Yard or Alley Complaint](#) - Report of an unclean or untidy yard, alley, or court that is visible from the street.
- [Dumpster Complaint](#) - Report a dumpster overflowing with garbage or construction debris, blocking the street or sidewalk or is uncovered.
- [Garbage Truck Spill Complaint](#) - Report of waste leaking or spilling from a garbage truck.
- [Trash or Recycling Storage Complaint](#) - Make a complaint about garbage or recycling stored or put out incorrectly.
- [Illegal Dumping Complaint](#) - Report the dumping of material such as trash bags, construction debris, and appliances from a vehicle.
- [Litter Basket Complaint](#) - Report an overflowing, missing, broken or misused basket.
- [Litter basket Request](#) - Request a litter basket in a new location within a commercial or mixed-use zone.
- [Littering Complaint](#) - Report chronic littering of small amounts of trash and debris.
- [Private Carter Sanitation Complaint](#) - Make a complaint about a commercial waste disposal company.
- [Waste Transfer Station Complaint](#) - Make a complaint about the condition of a private waste transfer station.
- [Dirty Sidewalk Complaint](#) - Report a dirty sidewalk including 18 inches into the street, is unclean.
- [Dirty Gutter Complaint](#) - Report a dirty gutter including 18 inches into the street.
- [Sidewalk Washing Complaint](#) - Report sidewalk washing when it is not allowed.
- [Catch Basin Complaint](#) - Report a storm drain that is missing its cover, clogged, sunken, raised, damaged, or defective.
- [Clogged or Blocked Culvert Complaint](#) - Report a drain underneath a road that requires cleaning or is blocked.

- [Street Sweeping Complaint](#) - Report a poor or missed street cleaning.
- [Building Construction Complaint](#) - Report a building construction violation.
- [Poster or sticker Complaint](#) - Report unwanted posters, advertisements, handbills, signs, menus, or stickers on public property.
- [Public Plaza Complaint](#) - Report a public plaza that is poorly maintained or not open to the public during posted hours. Public plazas are also known as privately owned public spaces.
- [Park Maintenance Complaint](#) - Report a park or park facility in need of cleaning or repair.
- [Beach Complaint](#) - Report an unsanitary condition, missing or broken safety equipment, or improper maintenance at a beach.
- [Pool or Sauna Complaint](#) - Report a problem with a pool or sauna.
- [Private Septic or Cesspool Complaint](#) - If an individual, private, on-site sewage disposal system, (septic tank or cesspool), is failing or not operating properly, the public may report the condition. Call 311 to report a problem with a private septic or cesspool system.
- [Parks](#) - Get information about parks within New York City and the greater Long Island area that are run by New York State and federal governments.

# Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

August 2018

Prepared in accordance with  
SPDES Permit Number NY-0287890  
Part IV.1.3



# Appendix 9.1

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## Appendix 9.1

### Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

## 1.0 Introduction

The City of New York's (City) Municipal Separate Storm Sewer System (MS4) Permit requires the development of a floatable and settleable trash and debris (herein referred to as "floatables") management program as part of the Stormwater Management Program (SWMP). In particular, Part IV.I of the MS4 Permit requires the submission of a work plan "to determine the loading rate of floatable and settleable trash and debris discharged, including land-based sources, from the MS4 to waterbodies listed as impaired for floatables" (New York State Department of Environmental Conservation, 2015). This work plan includes a literature search of methods employed by other municipalities, the proposed methodology for New York City, and a discussion as to why the selected method is best for conditions in New York City.

The City submitted a draft of this work plan to NYSDEC on August 1, 2017 for review. The City also posted the draft work plan on the DEP website on August 1, 2017 and presented it publicly at a Trash Free NYC Waters Meeting on October 4, 2017. The public was encouraged to review the draft work plan and submit comments by October 16, 2017. The City modified this work plan as a result of public input. Responses to the comments received at the public meeting and in writing via electronic mail are included in this work plan as Appendix A.

## 2.0 Review of Methodologies to Determine Loading Rates

The City conducted a literature review of methods employed by other municipalities to determine the loading rate of floatables from separate storm sewer systems. As the control of floatables is not a common provision of MS4 permits, and trash TMDLs are similarly infrequent, only a few municipalities attempted to determine a floatables loading rate. Those municipalities with published methodologies include San Francisco, Los Angeles County, Baltimore City and County, and Washington, DC. Each of these municipalities is subject to trash TMDLs except San Francisco, and each of these municipalities calculated loading rates that include both MS4 and combined sewer areas, except Los Angeles, which includes MS4 only. Additionally, the City studied the loading rate of floatables in connection with combined sewer overflows (CSOs).

In general, each municipality conducted field monitoring to determine representative floatables loading rates for various land use types, and then applied those representative rates by land use in each catchment area to generate the overall annual loading rate by area. Municipalities selected this method because associating floatables loading rates with land use provided a logical way to extrapolate loading rates from readily available information. However, some municipalities found that land use alone was not a good predictor of loading rate, and attempted to account for other factors such as median income, proximity to "downtown" (high commuter activity) areas, frequency of street sweeping and rainfall. Table 1 summarizes the different methods that each of the other municipalities used to determine loading rates. The following sections provide additional information about the methods used by each municipality.

Table 1. Factors Included in Determination of Floatables Loading Rate

| Municipality         | Metric | Field Sampling | Land Use | Median Income      | Rainfall           | Street Sweeping    |
|----------------------|--------|----------------|----------|--------------------|--------------------|--------------------|
| Los Angeles, CA      | Volume | Yes            | Yes      | No                 | No                 | No                 |
| Baltimore City, MD   | Weight | Yes            | Yes      | No                 | Yes <sup>(2)</sup> | No                 |
| Baltimore County, MD | Weight | Yes            | Yes      | No                 | Yes <sup>(2)</sup> | No                 |
| Washington, DC       | Weight | Yes            | Yes      | No                 | Yes <sup>(2)</sup> | No                 |
| San Francisco, CA    | Volume | Yes            | Yes      | Yes <sup>(1)</sup> | Yes <sup>(3)</sup> | Yes <sup>(3)</sup> |

## Notes:

(1) Used in conjunction with certain land use types

(2) Monitoring period rates per inch of rainfall normalized to long-term annual rainfall

(3) Application of ratio of frequency of rainfall and street sweeping

## 2.1 Los Angeles County, California

Los Angeles utilized a method to determine floatables loading rates based on land use. Field monitoring was performed between 2002 and 2004 at about 175 sites, with each site consisting of two to four storm-drain inlet structures fitted with full-capture devices (perforated plates) designed to prevent any items larger than 5 mm from exiting the structure for hourly intensities up to the one-year return period. Each site was characterized according to land use in its catchment area, with five land use types: industrial, commercial, open/parks, high-density residential, and low-density residential. Field monitoring involved quantifying the uncompressed volume of trash accumulated in the structure since the prior cleanout, with sediment and vegetation excluded. Los Angeles expressed the observed loading rate for each site as gallons per day of accumulation per acre of catchment.

## 2.2 Baltimore City and County, Maryland

Baltimore City and Baltimore County determined floatables loading rates using a method based upon the Los Angeles method. However, Baltimore City and Baltimore County followed different field monitoring practices and, as described below, reduced the calculation method to reflect just two land-use types, urban and non-urban (forest).

Baltimore City monitored five stormwater outfall locations to represent two of the City's three major watersheds. No stations were sampled in the Baltimore Harbor watershed due to lack of accessibility, high wet-weather flows, and limitations regarding the catchments available for characterization. Field monitoring involved collecting trash accumulated in capture devices at each outfall every two weeks. Field crews separated trash from vegetation, drained

liquid from containers, and allowed the trash to air dry before measuring the trash weight. Baltimore City then calculated the observed loading rate for each outfall as weight of floatables per day of accumulation per acre of catchment.

Baltimore County monitored trash generated over a one-year period at 17 stormwater management facilities (detention ponds) and at 20 in-stream sites. The County selected in-stream sites based on their suitability for monitoring stormwater trash, safe access, and the upstream area being predominately one land use category. Monitoring at in-stream sites involved marking out a 500-foot section of the stream from which field crews collected all trash at the start of the study



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### Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

and then on a monthly basis. In addition to excluding vegetative debris, draining all liquids from containers, and allowing the trash to air dry, the field crews also separated the trash into five categories (plastic bottles, glass bottles, aluminum cans, bulk “dumped” items, and other). Field crews measured dry weight for each category and counted the number of items in each of the bottle and can categories.

Baltimore County expressed the observed loading rates for each site as gallons per day of accumulation per acre of catchment. Variability between sites led Baltimore to consider just two land use types: urban and non-urban (forest).

### 2.3 Washington, District of Columbia

Washington, DC utilized a floatables loading rate methodology similar to that of Los Angeles and Baltimore. Using this methodology, DC conducted field monitoring at 10 outfall locations and 30 in-stream locations. Field crews collected trash from nets installed on the monitored outfalls after each storm event, and from 500-foot segments along the

in-stream sites on a quarterly basis. Field crews quantified the visible trash, excluding vegetative debris, emptying liquids from containers, and allowing the trash to air dry. Field crews also separated the trash into 44 item-type categories and counted each. DC then calculated an estimate of total weight based on standardized weights for each item type.

Each site was characterized according to its catchment’s predominant upstream land use, based on seven different land use types (roadways, institutional, commercial, industrial, high-density residential, low-density residential and open space/parks). For each site, DC calculated the observed loading rate as the accumulated trash weight per acre per inch of rainfall during the accumulation period, and then developed average loading rates for each land use category. DC then calculated the overall loading rate by applying each land use category’s loading rate (in terms of trash weight per acre of that land use per inch of rainfall) for the total acreage of that land use in the municipality and for the total long-term average rainfall (inches per year).

### 2.4 San Francisco, California

San Francisco utilized a floatables loading rate methodology that, while based upon land use, also accounted for other drivers such as income level, site-specific factors, and the relative frequency of street sweeping and rainfall.

Field monitoring involved 159 stormwater inlet structures, each draining a catchment with at least 70 percent of its area representing one of 10 different categories: low-, mid-, and high-income retail; low-, mid-, and high-income residential; industrial; commercial; urban park; and schools. Each monitored site was retrofitted with a full-capture device (perforated plate) designed to prevent any items larger than 5 mm from exiting the structure for hourly intensities up to the one-year return period. During the monitoring period, field crews cleaned out all accumulated material from the inlet structure, allowed it to air dry, and separated it into eight material/item categories (plastic recyclable beverage containers, plastic single-use bags, plastic foam food ware, plastic other, paper, metal, other trash, and non-trash debris such as sediment and vegetation). Field crews would then measure the dry weight, uncompressed volume, and item counts (for trash categories).

San Francisco generated field monitoring results by site and by catchment category. Initial results indicated that there was a high variability of observed loading rates, even within a particular catchment category. San Francisco interpreted this to mean that its calculation method had not taken into account other driving factors. In order to account for this variability, San Francisco refined the method to distinguish between the monitored “trash-loading rate” from the catchment to the receiving water and the “trash-generation rates” within the catchment. The difference between the two is the “trash-interception rate,” whereby some of the generated trash is captured via street sweeping or other controls, preventing material from discharging to the receiving water. Only trash remaining on the street is available for rainfall to transport to the stormwater inlet structures. San Francisco adjusted the loading rates to account for these processes by applying a factor based upon the relative frequency of street sweeping and rainfall in each catchment area.

In calibrating the refined method’s results for trash-loading rate, San Francisco incorporated other refinements to manually adjust for geographic variations in loading rates. San Francisco conducted a final, limited validation of the refined method using floatables loading measurements for one cleanout period at two sites.

## 2.5 New York City, New York

As documented in its 2005 Citywide Comprehensive Floatables Plan - Modified Facility Planning Report, New York City Department of Environmental Protection (DEP) performed floatables monitoring to identify the sources of floatables pollution in New York Harbor and to understand the processes affecting how the City generates and controls floatables. While there are many ways floatables can reach a waterway including, but not limited to, illegal dumping, shoreline activities, direct disposal or wind action, this study determined that floatables discharging from the storm sewer system are consistent with street litter. However, this conclusion would need to be looked at further as other studies found that the amount of floatables entering the storm sewer system is rainfall dependent but does not necessarily depend on the source (Walker and Wong, December 1999). The amount of trash that enters the sewer system depends on the energy available to re-mobilize and transport deposited litter on street surfaces rather than the amount of litter deposited on street surfaces.

The 2005 DEP study also concluded that land use was not a good predictor of street litter levels. Based upon various field studies, DEP developed a model capable of calculating floatables loadings from combined and/or separately sewered areas. This model is based upon the following primary inputs for a given catchment:

- 1 Street litter generation rate, in terms of quantity (item count, weight, or visible area) per year. This rate was calculated for study-baseline conditions using a build-up/wash-off submodel given:
  - Average annual litter level, in terms of the City’s “Street & Sidewalk Cleanliness Ratings”
  - Street sweeping schedule (and litter-removal efficiency of sweeping)
  - Annual occurrences of storms with at least 0.2 inches of rainfall (and litter-transport efficiency of such storms to flush litter into catch basins)
- 2 Total length of curb in the catchment
- 3 Percentage of hooded and non-hooded catch basins in catchment (and associated floatables-removal efficiency of each)
- 4 Percentage of catchment that is tributary to end-of-pipe controls such as booms or nets (and associated floatables-removal efficiency of each)

During implementation of its catch basin hooding program, DEP applied this model to track the floatables loading rate, relative to baseline conditions, on an annual basis. Along with other measures, such as yields at end-of-pipe facilities and observed levels of floatables at various locations in New York Harbor and along shorelines, the model results satisfied annual reporting requirements associated with the CSO control program.

## 3.0 Advantages and Disadvantages of Different Methodologies

The survey of municipalities that estimate floatables loading rates revealed a range of methods, from simple, per-day rates based solely on urban or non-urban land uses, to complex calculations based on multiple catchment categories including land use and median income, and adjusted to account for street sweeping frequency and rainfall. Differences between

the methodologies do offer advantages and disadvantages. This section describes some of the key areas in which the methodologies differ and the advantages and disadvantages of the different approaches.

### 3.1 Metrics for Floatables Quantity and Loading Rates

The metric(s) selected for characterization of floatables is an important aspect related to the methodology selected to determine the floatables loading rate. Floatables refers to a class of varied materials that is not easily quantified and for which there is no “standard method” of analysis. Metrics used to quantify floatables include item counts, volume, drained

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### Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

weight, and visible surface-area measurements. Once collected, floatables are most easily described in terms of volumes or weights. However, weight metrics are susceptible to skewing from lightweight materials (such as polystyrene) and heavier materials (such as glass or wet materials). Volume metrics can also be skewed by large-area / small-volume materials (such as plastic sheeting) or the presence of natural materials (such as leaves) that are not the target of a floatables loading rates estimate, but these instances are typically less likely or, in the case of leaves, limited to a relatively short period of time.

Another difference in the commonly applied metric for loading rate is whether to express the rate in terms of “per day” or “per inch of rain.” Some municipalities, such as San Francisco, Washington, DC, and New York, see a clear relationship between loading rates and rainfall. Other municipalities, such as Los Angeles, do not see a significant correlation between loading rates and rainfall. While differences in weather patterns may in part explain this situation, direct deposition of litter into catch basins (such as by pedestrians and/or mechanical street sweeping equipment) and the practice of associating per-day catch basin accumulations with per-day discharges may be the reasons for this apparent discrepancy. To some extent, expressing loading rates as an annual average helps to even out seasonal variations in wet weather and the associated variation in loading rates.

### 3.2 Inclusion of Various Factors Affecting Floatables Loading Rate

Other municipalities' studies to monitor and analyze floatables loading rates clearly demonstrated that floatables loading rates are highly variable from site to site and over time. The most comprehensive studies acknowledged that the primary factors affecting loading rates are litter-generation rates, litter-removal rates, and rainfall, while secondary factors include population, land use, street sweeping methods and frequency, storm-sewer infrastructure (such as numbers and types of catch basins), and storm-sewer maintenance activities (such as catch basin cleaning). Because litter-generation rates are dependent upon human behavior, public education and enforcement of anti-littering laws, as well as litter-basket deployment and servicing, can also affect loading rates.

The studies also indicated that the relationships between the various factors can be dynamic and difficult to characterize. The simplest methods determine loading rates solely on the basis of land use. The advantage of this approach is that land use is a readily available parameter. Baltimore's approach to land use was simplest, using only two categories for catchment land use (urban and non-urban). Los Angeles, Washington, DC, and San Francisco utilized up to seven different land use types. Although the intent of using multiple land uses was to explain more of the variation in loading rates between different sites, most studies acknowledged that land use alone is a poor predictor of loading rate.

Some municipalities attempted to account for additional factors in their calculation of loading rate. San Francisco performed a correlation analysis and determined that adding median income level to further distinguish catchment land use improved the predictive capability of its method. San Francisco and Washington, DC determined that accounting for rainfall also improved the results. San Francisco recognized that accounting for street sweeping and rainfall frequency also improved the prediction of loading rate from the catch basins because these actions directly impact the portion of litter on the streets that is captured via sweeping versus flushed into the catch basins.

The primary differences between the methods adopted to determine loading rate were the factors used to differentiate the loading rates from site to site, and over time. The simplest methods based loading rates solely on land use, while the most complex methods attempted to account for other factors, such as median income, street sweeping frequency and rainfall. DEP's approach was unique among this group because DEP based its method on measures of street litter level, rather than on land use as a surrogate for street litter level.



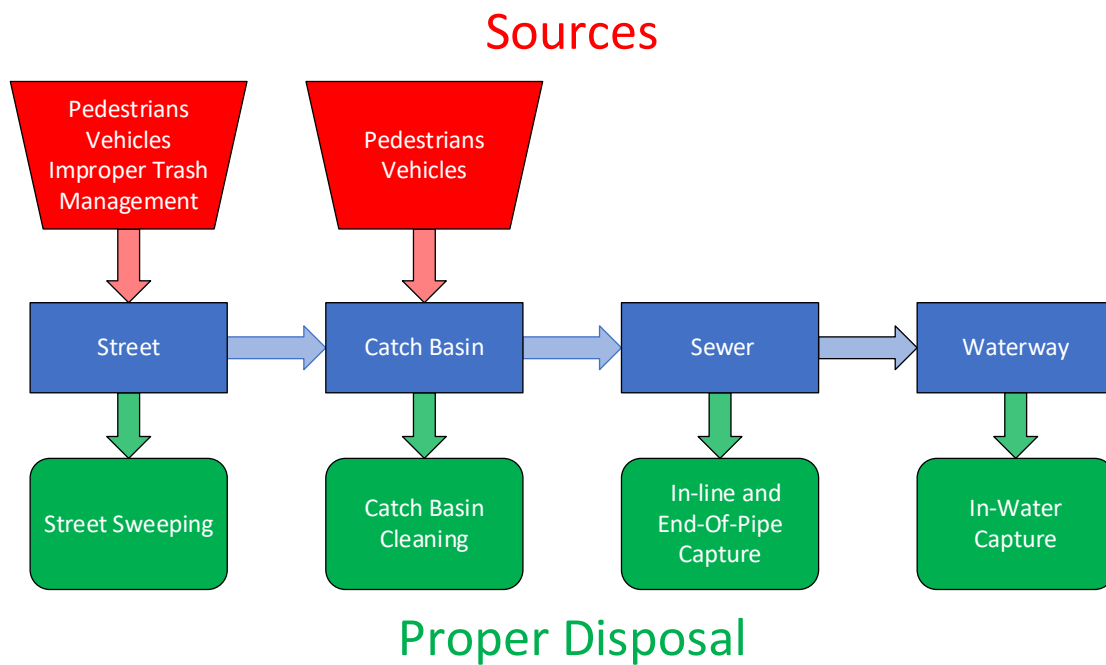
## 4.0 Proposed Methodology for New York City

This section presents an overview of the approach that the City proposes to use to determine the floatables loading rate from MS4 outfalls to floatables-impaired waterbodies, a justification for the proposed approach, and specifics on the methodology to implement the proposed approach. Per the Program Development Compliance Schedule in Part IV.O of the City's MS4 Permit, the City will submit a schedule for completing the floatables loading rate determination within three months after DEC approves the final work plan.

### 4.1 Overview of Proposed Approach

The City's proposed methodology is a hybrid approach that combines field measurements and model analysis. Using this approach, the City proposes to take field measurements of floatables discharged from catch basins representing various categories of sites that comprise the MS4 drainage areas. These data can then be used to extrapolate a floatables loading rate. In conjunction with field measurements, the City will use an updated version of DEP's existing floatables model to check the results of the field monitoring and to account for downstream in-water controls such as booms. Figure 1 below describes schematically the application of the existing floatables model to the City's MS4.

Figure 1. Schematic of MS4 Floatables Sources, Transport, Controls and Fate



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#### 4.2 Justification for Proposed Approach

As described in Section 3.0, the approaches utilized by other municipalities for determining floatables loading rates involve a range of complexities in terms of methodologies and factors affecting loading rates. The City's proposed approach, which combines the field measurement component of approaches utilized by other municipalities with the work done by DEP in the past, is suitable for determining floatables loading rates for the following reasons:

- **Considers factors beyond land use.** Other municipalities found that land use alone was not a good predictor of floatables loading rate. Where the surveyed municipalities characterized the monitored sites based on catchment land use, the City would select monitoring sites based upon important factors already understood to impact floatables discharge rates from catch basins in New York City. These factors include catchment characteristics (such as litter levels) and catch basin attributes (such as presence of a hood).
- **Utilizes institutional knowledge and already developed tools.** DEP previously studied floatables sources and effectiveness of existing floatables controls. Through a combination of field studies and modeling, DEP developed both an understanding of processes and models to estimate the impact of those processes on floatables loading rates.
- **Provides opportunities to update previous assessments.** Through targeted, focused field studies, the City can update its understanding of how floatables discharge rates are related to differences in certain factors such as street litter levels and existing floatables controls. This approach will also enable the City to observe changes in the types of items that make up street litter and floatables.
- **Isolates floatables contribution at the entry point to the MS4.** The proposed field monitoring will focus on characterizing the type and quantity of floatables entering the MS4 from the catch basins. This methodology avoids logistical difficulties and inaccuracies associated with monitoring outfalls in tidal systems, and allows characteristics of floatables to be determined for different areas.

#### 4.3 Methodology to Implement Proposed Approach

In summary, the City's proposed methodology involves the following steps:

- 1 Selection of representative sites at which to conduct field monitoring
- 2 Field monitoring using proposed metrics to measure floatables discharge rates from catch basin sites comprising the various site categories within New York City's MS4 areas
- 3 Analysis of field measurements to determine unit loading rates by site category
- 4 Establishment of weather and other conditions suitable for calculation of floatables loadings from MS4 areas
- 5 Application of unit loading rates to individual catch basins, and summation of the results by MS4 outfall and by waterbody, for each waterbody designated as impaired due to floatables.

The following sections describe each of these steps in detail.

##### 4.3.1 Selection of Representative Sites for Field Monitoring

In order to represent the full range of factors affecting floatables generation, interception, and loading for MS4 areas in New York City, the City developed 21 site categories to be included in the field monitoring program. Each site category represents a different combination of representative catch basin attributes and catchment characteristics or unique land use types.

###### Catchment Characteristics

Catchment characteristics include street litter level and street sweeping frequency. Street litter levels directly impact the quantity of floatable material available for discharge into catch basins, and so monitoring sites will be selected to represent each of three different street litter levels (high, medium, low), as well as "typical" levels or conditions for arterial highways,

exit ramps/turnouts, and parks. Because street sweeping frequency directly impacts the portion of street litter that is captured versus carried into catch basins during storms, the City will also select monitoring sites to represent each of three different street sweeping frequencies. Preliminary analysis suggests categories of high, medium, and low frequency may be appropriate, but these may change based on further analysis of MS4 areas. For example, categories of high, medium/low, and not applicable (N/A) may better represent conditions in the MS4. Together with rainfall conditions, street sweeping frequency and street litter level represent the secondary factors from which street litter generation can be gauged.

**Catch Basin Attributes**

The catch basin attribute that most directly impacts the discharge rate of floatables to storm sewers (and hence to receiving waters) is the presence of hoods. Catch basin hoods are designed to prevent sewer gases from venting through the catch basin. Because the hoods shield the catch basin’s pipe outlet, they also prevent floatable items from entering the sewer system. Where present, catch basin hoods are effective at retaining floatables in catch basins; therefore, monitoring sites will be selected to represent both hooded and unhooded catch basins.

**Land Use**

As described above, the City will rely on the above factors known to impact the discharge rate of floatables and not general land use types (such as residential, commercial or industrial) to select catch basin sites for monitoring. However, the City will include three additional categories to represent catch basins located within unique land uses. These land use types include (1) arterial highways, (2) exit ramps/turnouts, and (3) parks. The proposed work plan includes monitoring of catch basins located in these land uses to characterize representative loading rates from catch basins in these site categories.

Catch basins along arterial highways, on exit ramps/turnouts, and within parks may not share characteristics with current standard DEP designs or maintenance practices. As a result, none of the other site category factors may be representative of these catch basins. Additionally, limited information about litter levels is available in these areas. The catch basins

in these areas were not included in previous DEP floatables studies because they were not previously subject to SPDES permit requirements on floatables control. However, these catch basins are now covered by the MS4 Permit and are therefore included in this methodology.

**Site Categories for Field Monitoring**

Table 2 lists the 21 site categories proposed for the field monitoring program. With three different catch basin sites per category, the proposed field monitoring program will include 63 monitored sites.

Table 2. Site Categories for Monitoring MS4 Catch Basin Discharges

| <b>Site Category</b> | <b>Catch Basin Attributes</b> | <b>Street Litter Level</b> | <b>Street Sweeping Frequency</b> | <b>Site Count per Category</b> |
|----------------------|-------------------------------|----------------------------|----------------------------------|--------------------------------|
| 1                    | Hooded                        | High                       | High                             | 3                              |
| 2                    | Hooded                        | High                       | Med                              | 3                              |
| 3                    | Hooded                        | High                       | Low                              | 3                              |
| 4                    | Hooded                        | Med                        | High                             | 3                              |
| 5                    | Hooded                        | Med                        | Med                              | 3                              |
| 6                    | Hooded                        | Med                        | Low                              | 3                              |
| 7                    | Hooded                        | Low                        | High                             | 3                              |



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### Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

|    |                         |         |      |   |
|----|-------------------------|---------|------|---|
| 8  | Hooded                  | Low     | Med  | 3 |
| 9  | Hooded                  | Low     | Low  | 3 |
| 10 | Unhooded                | High    | High | 3 |
| 11 | Unhooded                | High    | Med  | 3 |
| 12 | Unhooded                | High    | Low  | 3 |
| 13 | Unhooded                | Med     | High | 3 |
| 14 | Unhooded                | Med     | Med  | 3 |
| 15 | Unhooded                | Med     | Low  | 3 |
| 16 | Unhooded                | Low     | High | 3 |
| 17 | Unhooded                | Low     | Med  | 3 |
| 18 | Unhooded                | Low     | Low  | 3 |
| 19 | Arterial Highway        | Typical | N/A  | 3 |
| 20 | Exit Ramps/<br>Turnouts | Typical | N/A  | 3 |
| 21 | Parks                   | Typical | N/A  | 3 |

**Total number of catch basin sites to monitor**

**63**

The City will select specific sites for the field monitoring program based upon a combination of desktop analyses and field verification. Desktop analysis will identify candidate areas based upon information made available to DEP. Areas with high, medium, and low litter levels will be identified based on geographical assessments (“heat maps”) developed using information including:

- 1 Recent, annual-average Street & Sidewalk Cleanliness Ratings data, which indicate the relative quantity of litter based on visual ratings conducted twice per month on about five percent of city blockfaces by the New York City Mayor’s Office of Operations
- 2 Litter information from the Street Conditions Observation Unit (SCOUT) of the Mayor’s Office of Operations
- 3 Catch basin cleaning frequency and similar information that DEP logs, which can be used to track the build-up of debris in DEP catch basins.

The City will identify MS4 areas with different street sweeping frequencies based on mechanical sweeper routes and schedules maintained by the New York City Department of Sanitation (DSNY), information concerning sweeping in Business Improvement Districts (BIDs) in MS4 areas, and, as applicable, information concerning sweeping programs such as Ready Willing and Able (RWA). Similarly, the City will use DEP’s catch basin database to identify individual catch basins with hoods or no hoods. Finally, the City will also apply desktop analyses to identify potentially suitable catch basin locations along arterial roadways, on exit ramps/turnouts, and within parks that drain directly to waterbodies that are impaired for floatables.

In order to confirm the suitability of candidate sites for inclusion in the monitoring program, the City will visit each site to ensure that it can perform sampling safely and that site conditions match the intended category. Based on this information, the City will revise the site selection as needed.

### 4.3.2 Field Monitoring and Metrics

The City proposes a field monitoring program that will quantify floatables loading rates using suitable metrics. These metrics include a definition of floatables, methods of quantifying floatables in a manner allowing for scalability, and expression of rates in terms of suitable time periods. This section describes each of these metrics, as well as the general sampling procedure.

#### Definition of Floatables

The City's MS4 permit refers to control of "floatable and settleable trash and debris." This language is consistent with the definition of floatables that DEP adopted for prior floatables studies. As defined in DEP's 2005 Citywide Comprehensive Floatables Plan - Modified Facility Planning Report, floatables are "manmade materials, such as plastics, papers, or other products which when improperly 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 [...]." For clarity, it is noted that "floatables" include materials that are settleable as well as those that may float on the water surface or are neutrally buoyant, and acknowledged that such materials may float or sink depending on the ambient conditions to which they are subject. In this context, "floatables" does not include natural materials, vegetation, oil and grease, or sediments and small particles.

#### Floatables Metric

The City proposes to express floatables quantity in terms of volume. Volume is the most appropriate floatables metric for three important reasons. First, volume is an established metric associated with trash (as collected in garbage cans, dumpsters, trucks, barges, and landfills). Second, volume describes both the visual and spatial impact of floatables, and can better represent the impact on wildlife than weight. Third, unlike item count or surface area, volume is relatively simple to measure in large quantities, and is not as susceptible as weight to skewing due to complicating factors such as water content, heavy material such as glass bottles, or light material such as Styrofoam containers. As in prior studies, the City proposes to record other measures, such as weight, item counts, etc., for purposes of establishing typical relationships between metrics.

#### Rate Metrics for Time Period

New York City proposes expressing loading rates in terms of annual average periods. Expressing the loading rate as an annual average helps to normalize seasonal and weather-related variations. Nevertheless, year-to-year variations in loading rate will occur due to differences in the number, timing, and intensity of storm events. As a result, describing loading rates based on long-term average rainfall patterns will help to highlight the impact of operational factors (such as littering behavior, street sweeping practices, and catch basin retrofits) on year-to-year changes in loading rates.

#### Field Monitoring Protocols

New York City proposes field monitoring protocols to capture floatables in catch basin discharges to the MS4 using mesh strainer baskets deployed in MS4 manholes, as depicted schematically in Figure 2. Field crews will collect samples with a frequency suitable to characterizing accumulated amounts in dry periods and in wet periods. Floatables collected from each site will be separately sorted to remove sediment and vegetation, quantified at a central processing site, and recorded. This protocol is consistent with the techniques used in DEP's previous floatables study. The City will select a monitoring period that allows for a minimum of 10 storms with at least 0.2 inches of rainfall to be monitored and seasonal differences to be captured.

## Appendix 9.1

### Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

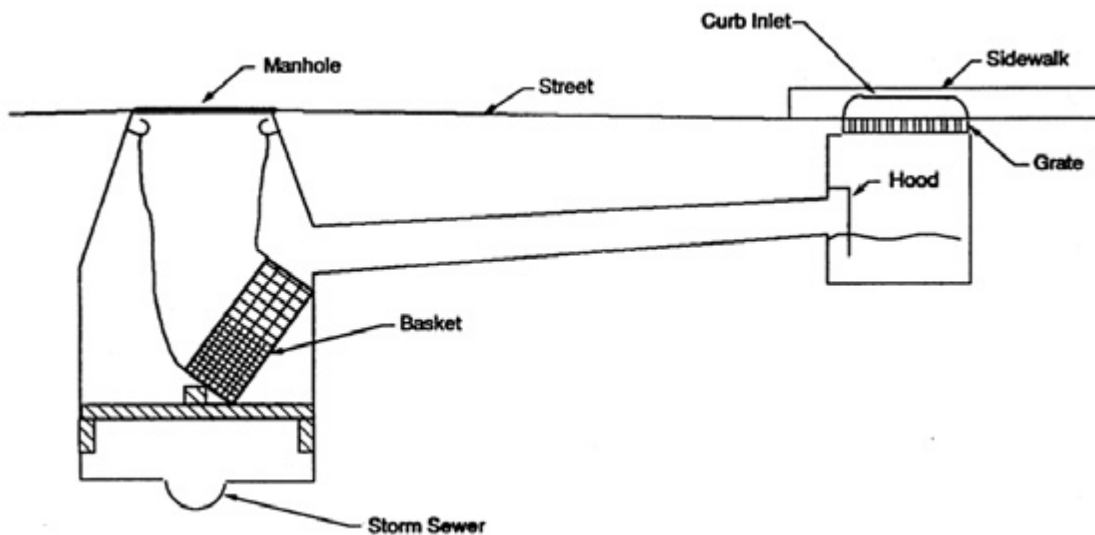


Figure 2. Sampling of Catch Basin Discharges to Sewer

#### 4.3.3 Analysis to Determine Unit Loading Rate by Site Category

In order to develop a unit loading rate that can be scaled appropriately, the results of the field monitoring program will require analyses to normalize the size of the catchment upstream of the monitored catch basin site as well as the number of days and/or amount of rainfall during the accumulation period. The City will calculate unit loading rates for each site category.

As indicated in DEP's previous floatables studies, the length of curb (curb feet) in a catchment more closely correlates to floatables load than the area (acreage) of the catchment does. This is not surprising, because most street litter is located within 18 inches of the curb<sup>1</sup>, and because most streets are crowned, with slopes downward to either side of the street, so that drainage is toward and along the curb to the catch basin. As a result, the City proposes using catchment curb length to normalize the measured discharge.

Similarly, the City anticipates that days of accumulation between qualifying storm events will correlate to the quantity of material discharged, and therefore proposes using days of accumulation (or inversely, frequency of qualifying storms) to normalize the measured discharge. As a result, these analyses will require information regarding rainfall during the

accumulation period at each monitored catch basin site. For this purpose, the City proposes to utilize the nearest-available rain gauge from the rain gauge networks maintained by the National Weather Service, United State Geological Survey, DEP, and other reputable organizations, as well as radar rainfall information available from the National Weather Service.

The City will analyze the resulting unit (normalized) loading rates to confirm scalability and adherence to scientific principles (such as mass balance) and relationships established during prior floatables studies (such as relative capture in hooded versus unhooded catch basins).

Given an MS4 catch basin's site category's unit loading rate, catchment size (curb miles), and rainfall pattern (long-term average year), the catch basin's overall floatables load can then be calculated. The following two steps describe that process.

<sup>1</sup> The City will certify that it has adequate legal authority pursuant to Part III.B. upon DEP's adoption of final rules to implement the regulatory programs authorized under Chapter 5-A of the Administrative Code.



#### 4.3.4 Establish Conditions for Calculation of Loading Rate

While measured loading rates reflect conditions during the field monitoring program, the expression of loading rates from particular MS4 outfalls or to floatables-impaired waterbodies will be most useful if applied using certain conditions that may be used as a baseline for comparison in the future. For this purpose, the City proposes using long-term average rainfall patterns, as determined from National Weather Service rain gauge data and as applied using the model. The City can also use the model to specify other conditions, such as degree of catch basin hooding, street litter levels, etc., as necessary, to develop an appropriate baseline condition.

#### 4.3.5 Calculation of Loading Rate

In order to calculate the total floatables loading rate for a specific floatables-impaired waterbody, DEP proposes the following:

- 1 For each catch basin in the MS4 area
  - » Identify the unit loading rate corresponding to that catch basin's site category. Unit loading rate is expressed in terms of floatables volume per length of curb per days of accumulation (or per number of storms) per year.
  - » Apply the unit loading rate for that catch basin to calculate the annual floatables load, in terms of volume, by multiplying the unit loading rate by:
    - The length of curb in the catch basin's catchment.
    - The number of days of accumulation (or number of storms) in the baseline year.
- 2 Sum the calculated loading rates for each catch basin to determine the total loading rate for the MS4 outfall. This will be a total volume per year.

To calculate the total floatables loading rate from MS4 areas to a particular waterbody, the above procedure would be repeated for each MS4 outfall discharging to the waterbody, and the sum of these would then represent the total MS4 loading rate to the waterbody.

After developing the unit loading rates as described in the preceding section, DEP will analyze available information on both existing and historical conditions regarding New York City's floatables controls. The current level of floatables

control in MS4 areas reflects changes implemented in various New York City programs, such as the catch basin hooding program (completed in 2010 but ongoing per SPDES permit requirements), the recently launched annual catch basin inspection program (required by City local law through the end of fiscal year 2019), and extensive public education and media campaigns. The City will evaluate the impact of these programs on floatables loading rates for MS4 areas before making a recommendation of a particular baseline loading rate year, against which to track and monitor floatables loadings in future years.

## Appendix 9.1

### Work Plan To Determine the Loading Rate of Floatable and Settleable Trash and Debris Discharged from the MS4

## 5.0 References

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# Media Campaigns



## Media Campaigns

### B.Y.O. Campaign

Launched in 2015, the B.Y.O. (Bring Your Own) Campaign encouraged New Yorkers to live a less disposable lifestyle by using reusable bags, mugs, and bottles. Based on research on the barriers and motivators related to using reusable items, the campaign paired the easily understood call-to-action “bring your own” with a message designed to inspire the desired behavior. By encouraging New Yorkers to use reusable items, the campaign helps reduce the initial generation of waste that may end up as floatable debris in the City’s waterbodies.

This multi-media campaign was designed and implemented by GreeNYC, a public education program based in the Mayor’s Office of Sustainability, to strategically reach New Yorkers while they were at home and out in NYC. The campaign included bus and subway ads, digital ads, radio public service announcements, billboards, and posters on DSNY trucks. GreeNYC also promoted the campaign at events throughout the City to spread the word and encourage New Yorkers to take the B.Y.O. pledge.

### Don’t Trash Our Waters

Seeking to raise public awareness of the connection between trash, litter, and water quality, the City developed the campaign message “Don’t Trash Our Waters.” This campaign featured a series of charismatic underwater characters, designed to remind New Yorkers that trash on the street ends up in our harbor and hurts local wildlife like dolphins, seals, whales, turtles, and oysters. In addition to raising awareness, the campaign also aimed to change littering behavior by imploring New Yorkers to “put it in the can.”

The “Don’t Trash Our Waters” Campaign was launched in May 2017 by DEP in coordination with Wildlife Conservation Society (WCS), DSNY, DPR, and the Mayor’s Office of Sustainability. Implemented in neighborhoods near waterbodies where floatables are of particular concern, this multi-media campaign used bus shelter, subway station, and digital ads to spread the message. Posters were also displayed on DSNY trucks and nearby park comfort stations. For this campaign, the City worked closely with the WCS to organize an event at the New York Aquarium in Coney Island that would provide New Yorkers with an opportunity to learn more about the New York seascape and the impact of plastics in the ocean.

To assess the reach of the campaign, the City counted the number and impressions of ads placed. To assess public engagement with the campaign, the City tracked visits to the DEP Trash Free Waters webpage and engagement with social media posts. To understand better how the campaign was perceived by the public, the City conducted an opinion survey to assess public awareness of the campaign, public sentiment regarding the campaign, and any self-reported behavior changes.

### #TalkTrashNewYork

The City developed a basketball-themed message to remind New Yorkers that keeping NYC clean is a team effort. DSNY partnered with DPR and the New York Knicks for #TalkTrashNewYork, an anti-litter campaign promoting clean streets, sidewalks, beaches, and parks across NYC. A public service announcement (PSA) aired locally and was promoted electronically, in print, and through social media. DSNY made the PSA material available at no cost to media outlets wishing to broadcast the message.

#TalkTrashNewYork launched at The Cage Basketball Courts in Manhattan in May 2017 and featured a free multi-station basketball clinic. Local children were invited to participate in the basketball clinic and learn the fine art of dribbling, shooting, lateral moves, strength, and flexibility, all while learning to keep their city clean. To draw attention to the anti-litter cause, DSNY worked with fashion designer Heron Preston to create a limited-edition, retro-style #TalkTrashNewYork basketball jersey for the first 200 children to play in the clinic. The campaign also provided hoop-themed litter baskets to be installed in City parks.

[nyc.gov/dep/ms4](https://nyc.gov/dep/ms4)