

Stormwater Management and MS4s

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Chapter 6: Stormwater Management and MS4s

What is Stormwater Pollution?

Stormwater is water from rain or melting snow that doesn't soak into the ground. Stormwater begins as clean water and flows directly into our rivers, lakes and streams. Along the way, it picks up pollutants with which it comes in contact as it flows over roadways, sidewalks, parking lots, construction sites, lawns, buildings, etc. These pollutants become part of the stormwater runoff that flows untreated through gutters, storm drains, canals and drainage ways into local surface waters. It is estimated that more than one-half of the pollution in the nation's waterways comes from stormwater runoff.

Why It's Necessary to Manage Stormwater

During runoff events, pollutants carried by stormwater (rainwater or snowmelt) enter and degrade the quality of lakes, rivers, wetlands and other waterways. Nutrients such as phosphorus and nitrogen

“When rainwater and snowmelt come into contact with pollutants that have accumulated over time on pavement, lawns, rooftops and other surfaces, those pollutants are carried directly, or through the drainage system, to nearby surface water bodies.”

can promote excessive growth of algae, deplete dissolved oxygen and harm other aquatic life. Oil and toxic chemicals from automobiles, sediment from construction activities, litter and trash, and careless application of pesticides, herbicides and fertilizers threaten the health of receiving waterways, impair recreational use and can cause death to fish and other aquatic life. Bacteria from animal waste and illicit connections to sanitary sewer systems can make lakes unsafe for wading, swimming and fishing.

Stormwater runoff can also lead to streambank erosion, flooding and damage to infrastructure and personal property. This is why the control of stormwater volume (quantity) is just as important as control of stormwater quality.

Pollutants of Most Concern

Stormwater runoff from impervious surfaces carries large amounts of various pollutants to surface waters.

These pollutants include nutrients, silt/sediment, pathogens, oil/grease, metals, debris and litter. The following summary outlines some of the stormwater pollutants warranting awareness.

Phosphorus: Phosphorus and other nutrients promote weed and algae growth in lakes and streams. Excessive weed growth clogs waterways and blocks sunlight. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the



Better stormwater management, and appropriately sized infrastructure, can help mitigate some flood damage.

water. Many fish and other aquatic organisms cannot exist in water with low dissolved oxygen levels. Sources of nutrients include fertilizer, failing septic tanks and detergents.

Silt and Sediment: Stormwater runoff that contains silt and sediment can damage the habitat needed by aquatic plants and animals. Aquatic habitat, including fish spawning areas, may be destroyed, food supplies reduced, and recreational activities may be impaired when sediment fills swimming areas and navigation channels. In addition to blocking sunlight needed for aquatic plant growth, sediment can transport toxic chemicals to bodies of water.

Toxic Substances (gasoline, household products, paint thinner, metals, etc.): Toxic substances may enter surface waters either dissolved in runoff or attached to sediment or organic material. The principal concerns in surface water are entry of these substances into the food chain with toxic effects on fish, wildlife and microorganisms, along with the degradation of habitats and the potential degradation of public water supplies. Toxins such as heavy metals bioaccumulate, meaning that they become more concentrated and toxic the higher in the food chain they progress. Toxic substances can originate from residential areas, businesses and construction sites. They include oil and grease from petroleum products, which form a film over the water that blocks oxygen transfer.

Pathogens (bacteria, viruses): Bacteria and viruses include infectious agents and disease producing organisms normally associated with human and animal waste, leakage from sanitary sewers, and seepage from septic tanks. Because pathogens can harm aquatic and human health, their presence can render lakes and streams unsafe for drinking, swimming, fishing and other forms of water recreation. Pathogens or biological contaminants come from litter, organic matter and animal waste.

Oxygen Demanding Organics: Natural or synthetic organic materials (including human and animal waste, decaying plants and animals, discarded litter and food waste) can enter surface waters either dissolved or suspended in stormwater runoff. Natural decomposition of the material can deplete dissolved oxygen supplies in the waters. When dissolved oxygen is reduced below a critical threshold level, it can impair or kill fish and other aquatic plants and animals.

Thermal Stress (sunlight): When streams lack nearby

trees and shade, elevated water temperatures can exceed fish tolerance limits, reduce survival and lower resistance to disease. Street surfaces and other impervious areas which have been heated by sunlight may also transport thermal energy to a stream during a storm event. Cold water fish populations (such as trout) may be reduced or eliminated.

Litter: Floating litter in water may be contaminated with toxic chemicals and bacteria and can be harmful or fatal to aquatic organisms. Obviously, aesthetics of the water are also negatively impacted.

History and Intent of Phase II Stormwater Permit Program

The Phase II Stormwater Program is a federal permit program designed to reduce the introduction of nonpoint source pollutants to surface waters via



Keeping stormwater out of the system using green infrastructure is part of the solution.

stormwater runoff. Its history began with the passage of the Clean Water Act in 1972. Under the Clean Water Act, the US Environmental Protection Agency (USEPA) initiated the National Pollutant Discharge Elimination System (NPDES) program. The purpose of NPDES is to protect the quality of the nation's water resources. In the early stages of the program, the focus was on regulation of "point source" pollution discharges from discrete, identifiable "outfalls" such as pipes carrying wastewater from a sewage treatment plant or industrial process facility to a water body. As a result of this permit program, point source pollution has been effectively controlled.

The majority of current water quality problems originate from nonpoint sources. Nonpoint source

pollution originates from multiple, diffuse sources spread across the landscape. When rainwater and snowmelt come into contact with pollutants that have accumulated over time on pavement, lawns, rooftops and other surfaces, those pollutants are carried directly, or through the drainage system, to nearby surface water bodies.

In 1990, the USEPA mandated the issuance of NPDES permits to control nonpoint source stormwater pollution, known as the “Phase I” Stormwater Permits. Authority for administering the NPDES permit program in New York State was delegated to the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC initiated its Phase I State Pollutant Discharge Elimination System (SPDES) permit program for stormwater in 1995. Most types of industrial facilities, construction sites disturbing over five acres of soil surface, and municipalities with separate storm sewer systems serving populations of over 100,000 were required to obtain coverage under the Phase I permit program.

What is an MS4?

A Municipal Separate Storm Sewer System (MS4) is any system of open or closed pipes, ditches or conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) designed or used for collecting or conveying stormwater and which is not a combined sewer. The MS4s are owned and operated by a government entity such as a town, city, village, state, county or publicly funded district or institution.

It is important to understand the difference between a separate storm sewer system and a combined sewer system. Separate storm sewers carry only runoff from rainwater and snowmelt, whereas combined sewer systems carry a combination of stormwater runoff and sanitary sewage. The latter are present and serve

significant proportions of many medium-sized cities in upstate New York. The MS4 permit regulations apply only to those areas served by separate storm sewer systems rather than combined systems.

NPDES Phase II

The NPDES program was expanded in 2003 to include construction sites disturbing between one and five acres of soil surface and municipalities with separate storm sewer systems serving 50,000 to 100,000 people with a population density of at least 1,000 people per square mile and that are contiguous to a centralized urban area. Referred to as Phase II of the program, automatically designated cities, towns, villages and counties, as well as special districts and government institutions within the urbanized areas, are required to control the quantity and quality of stormwater discharged from their Municipal Separate Storm Sewer Systems (MS4s). These entities are referred to as “regulated MS4s.”

The Statewide General Construction Permit required developers to control the quantity and quality of stormwater runoff from construction projects that disturb more than one acre of soil, regardless of



Investing in stormwater infrastructure protects the number one customer—the receiving stream.

whether or not the development is located within the boundary of an automatically designated MS4.

The term “disturbance” refers to any activity resulting in the exposure or movement of soil. This can include clearing, grubbing, excavation, grading, demolition, stockpiling, burrowing, or any other such activity. It is important to bear in mind that the one



Aging infrastructure often exceeds capacity when handling increasing volumes of stormwater.

acre threshold is cumulative. In other words, the one acre threshold is the total disturbed area over the life of the project and is not the maximum area disturbed simultaneously.

Also, two projects that are constructed as part of a larger common plan of development in a contiguous area, even if they do not each individually disturb one acre, are subject to the permit if combined disturbed area is one acre or more. The following are illustrative examples: two parts of a road improvement or utility project occurring within less than a quarter mile of each other; two single-family homes on lots originating from the same subdivided plot along a common road frontage; or commercial development by two different owners within the same industrial or office park.

Stormwater Program Objectives and Minimum Control Measures

The objectives of the Phase II MS4 General Permit are as follows:

- Reduce the discharge of pollutants to the maximum extent practicable
- Protect water quality
- Satisfy the appropriate water quality requirements of the Clean Water Act.

The USEPA determined that in order to satisfy these requirements, municipal stormwater management programs (SWMPs) must address six distinct elements of control commonly referred to as minimum control measures (MCMs). The six MCMs are summarized next.

MCM 1: Public Education and Outreach

The regulated MS4 must develop and implement

a formal program to educate the public concerning the issues of stormwater pollution. This involves identifying the pollutants of concern, target audiences (including elected and appointed municipal officials, municipal staff members, citizens, the land development industry and businesses), and intended education and outreach methods (mailings, print media, television or radio announcements, displays, presentations, school programs, etc.).

Recordkeeping and Reporting Requirements for MCM 1:

The information maintained will be heavily dependent on the specifics of the municipality's program.

MCM 2: Public Involvement and Participation

The regulated MS4 must involve the public in the stormwater program. The regulated municipality should identify the constituents from which feedback is desired and the types of input particularly sought. Regulated MS4s are encouraged to support or sponsor stewardship programs, such as stream cleanups, storm drain stenciling programs and membership in watershed organizations as a means of encouraging local residents to become involved in protecting and maintaining local water resources. As a required element of this MCM, the municipality must make its annual report available for public review and comment, and must document its intended response to comments and inquiries received. (NOTE: MCM 2 differs from MCM 1 in that MCM 1 focuses on fostering awareness of the stormwater pollution problem in the hope of promoting behavior changes; whereas, MCM 2 actively solicits participation and input from the public.)

Recordkeeping and Reporting Requirements for MCM 2:

- Names and contact information for relevant local officials and representatives with responsibilities for the stormwater program
- Comments received on the draft MS4 Annual Report and intended responses
- Date of public notice and date of public meeting each year, or date that the annual report was posted on the municipal website
- Information specific to your municipality's public involvement and participation program, such as date, location, and number of participants in public involvement activities
- Complaints or inquiries relating to local stormwater issues with follow-up action

MCM 3: Illicit Discharge Detection and Elimination

The regulated MS4 must develop a program to identify and eliminate sources of non-stormwater flow to the separate storm sewer conveyance system. Common examples include septic system, sanitary line and floor drain connections to storm sewers, and dumping of any non-stormwater substances directly into storm drains. Regulated MS4s are required to develop and adopt a local law or regulatory mechanism prohibiting non-stormwater discharges to the MS4, map stormwater outfalls and their associated drainage areas (sewersheds), establish an outfall monitoring program to identify non-stormwater discharges and determine their source, conduct public education regarding the problems created by non-stormwater discharges, and conduct enforcement actions or provide oversight of voluntary compliance to eliminate these discharges.

Recordkeeping and Reporting Requirements for MCM 3:

- Number and percentage of total outfalls inspected (20 percent is a suggested goal to ensure inspection of 100 percent every five years)
- Number of potential illicit discharges identified
- Number of illicit discharges eliminated
- Enforcement actions (Code Enforcement Officer)

MCM 4: Construction Site Runoff Control

The regulated MS4 must develop and implement a local law or regulatory mechanism to control erosion of sediment and pollution of stormwater runoff from construction sites during construction activity. The program must ensure development and implementation of Stormwater Pollution Prevention Plans (SWPPPs) in accordance with NYSDEC's standards as discussed in the Construction General Permit, including the current New York Standards and Specifications for Erosion and Sediment Control (2005).

A local law is required to give the municipality the authority to review SWPPPs, enforce the standards, and require proper management and stabilization of construction sites to prevent water quality violations. Regulated MS4s must also provide education to the construction industry on proper methods of erosion control (keeping sediment in place) and sediment control (capturing eroded sediment onsite); and, contractors performing work in all regulated MS4s must receive four hours of NYSDEC endorsed training every three years.

Previously, MCM 4 applied only to the designated urbanized area. As of the issuance of new permits in May 2010, the requirements now extend to the boundaries of the entire municipality regardless of the extent of the urbanized area.

Recordkeeping and Reporting Requirements for MCM 4:

- Number of SWPPPs reviewed
- Number of SWPPPs accepted
- Public comments received on SWPPPs with records of responses
- Number of sites inspected
- Number of inspections at each site
- Number of violation notices issued
- Number of corrective actions taken in response to violation notices
- Inventory of active construction sites

MCM 5: Post-Construction Stormwater Control

The regulated MS4 must develop and implement a local law or regulatory mechanism to manage the quantity and quality of stormwater runoff from construction sites through permanent stormwater management practices following the completion of construction activity. The program must ensure development and implementation of stormwater pollution prevention plans (SWPPP) in accordance with NYSDEC's standards as required in the Construction General Permit. All design components included in the SWPPP must be in conformance with the current New York State Stormwater Management Design Manual (2010). The 2010 Design Manual places a significant emphasis on Better Site Design and Green Infrastructure in stormwater management. This has changed the process for design and review of SWPPPs.

A local law is required to give the municipality the authority to review projects, enforce the standards, and ensure maintenance of stormwater facilities following completion of construction. The MCM 5 also requires regulated MS4s to identify water quality problems and implement stormwater retrofits to address those problems.

Previously, MCM 5 applied only to the designated urbanized area. As of the issuance of new permits in May 2010, the requirements now extend to the boundaries of the entire municipality regardless of the extent of the urbanized area.

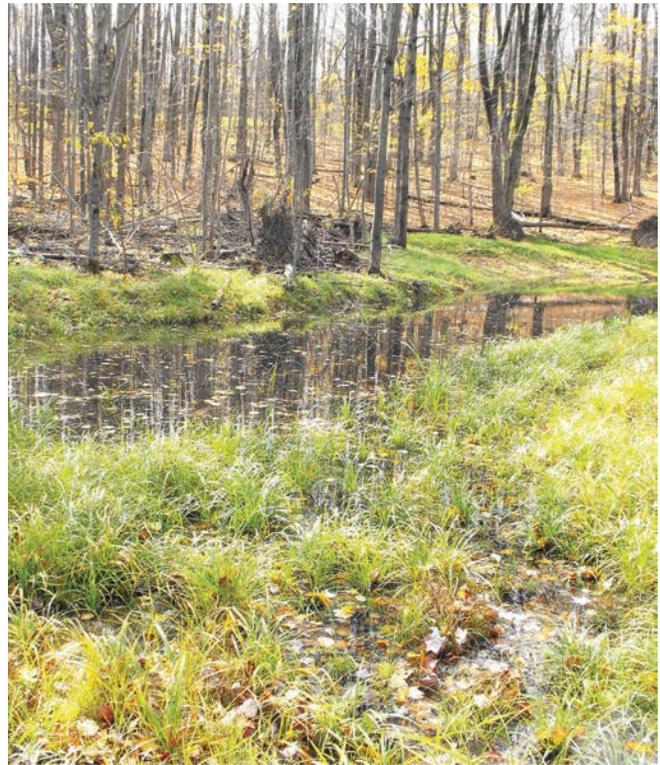
In addition to previously mentioned requirements, during development of municipal comprehensive plans, open space preservation programs, and other local

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laws and regulations, MS4s must consider principles of Low Impact Development, Better Site Design and Green Infrastructure. These principles may include elements such as “smart growth,” natural resource protection, impervious area reduction, maintenance of natural hydrology, and use of buffer zones or setbacks to protect environmentally sensitive areas, such as streams, wetlands and erodible soils.

Redevelopment Projects: Special design criteria apply to redevelopment projects (previously developed sites with existing impervious surface that is replaced or restored to pervious ground). Under certain circumstances detailed in Chapter 9 of the New York State Stormwater Management Design Manual, the water quality volume requirement may be reduced and some water quantity controls might be waived.

Impaired Waters: If a small MS4 discharges a stormwater pollutant of concern (POC) to an impaired water body (listed in Appendix 2 of the permit), the MS4 must ensure that there is no net increase in its discharge of the pollutant to that water. By January 8, 2013, MS4s must assess potential sources of the pollutant of concern (POC) in stormwater, and identify control measures that may reduce the pollutant. The Stormwater Management Program Plan (SWMP) must be updated if necessary. For the portions of the MS4 that drain to the listed water body, the effectiveness of the SWMP must be evaluated in drainage basins that have undergone significant alterations. Examples include changes to land use and impervious cover greater than one acre, or implementation of stormwater management practices during the time the MS4 has been covered under the MS4 general permit. The NYSDEC requires that approved computer models be utilized to complete the assessment. If the modeling shows increases in loading of the POC, the SWMP must be modified to reduce discharge of the pollutant so that no net increase occurs. Annual reports must contain an assessment of priority stormwater problems, potential management practices that are effective for reduction of stormwater POCs, and a gross estimate of the extent and cost of the proposed improvements. Guidance concerning the modeling process can be found online at: http://www.dec.ny.gov/docs/water_pdf/ms4rsappend.pdf.



Tioga County Soil and Water Conservation District Wetland Restoration mitigates flooding from storm events. Photo credit: Melissa Yearick, Tioga County SWCD.

Recordkeeping and Reporting Requirements for MCM 5:

- Number of SWPPPs reviewed
- Number of SWPPPs accepted
- Public comments received; records of comments and responses
- Post-construction stormwater management practices inspected
- Maintenance activities for post-construction stormwater management practices

MCM 6: Pollution Prevention and Good Housekeeping

The regulated MS4 must inventory all of its department operations and identify sources of pollutants of concern (POC) created by the operations. These operations include maintenance of municipal roadways and drainage systems, buildings and infrastructure, parks and open or common spaces, and solid waste disposal. Policies, procedures and best management practices must be identified and implemented to eliminate (or reduce to the maximum extent practicable) these pollutants. Municipal staff must be trained on the hazards of stormwater pollution and the practices required for preventing and mitigating those hazards.

At a minimum of every three years, MS4s must complete a self-assessment of all operations and facilities to ensure that discharges of POC are being eliminated to the maximum extent possible. Procedural changes must be implemented and communicated among various municipal departments.

Recordkeeping and Reporting Requirements for MCM 6:

Typical quantities that are recorded in the annual report include, but are not limited to, the following:

- Acres of parking lots swept multiplied by number of times swept
- Miles of streets swept multiplied by number of times swept
- Catchbasins inspected and cleaned when necessary
- Post-construction stormwater control practices inspected and cleaned when necessary
- Phosphorus applied in chemical fertilizer (lbs.)
- Nitrogen applied in chemical fertilizer (lbs.)
- Pesticides and/or herbicides applied

NOTE: This list is required data specifically mentioned in the permit text; NYSDEC expects that the municipal departments will also report on any and all other quantities that specifically relate to their unique operating circumstances. This includes, for example, quantities of deicer applied, recycling of hazardous waste or yard waste, miles of roadside

ditches and embankments stabilized, and any changes or improvements to the operations of municipal departments that would be expected to reduce or eliminate sources of stormwater pollutants. The number of staff trained in the pollution prevention program on an annual basis should also be reported. A goal of 100 percent of staff receiving initial training or refreshment of training on an annual basis is suggested.

Determining MS4's Responsibilities and Measurable Goals

Regulated MS4s were required to submit a Notice of Intent (NOI) as a prerequisite for obtaining coverage under the General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s) in 2003. The NOI outlined the specific elements of the permittee's intended stormwater management program relative to each of the six Minimum Control Measures. The NOI also identified the timeline and schedule for completion of the various program elements and discusses specific processes for accomplishing stated goals. In summary, the completed NOI provided a framework for the regulated MS4's stormwater program, although goals and methods may change as the program is re-evaluated on an annual basis.

In May 2010, the permit was updated and designated as SPDES GP-0-10-002. All municipalities previously covered under the 2008 permit automatically had their coverage transferred to the new permit (designated SPDES GP-0-10-002). The current permit is available on the NYSDEC website at: <http://www.dec.ny.gov/chemical/43150.html>. The permit will be updated and re-issued in 2015.

The MS4 officials should thoroughly review the full MS4 Permit (GP-0-10-002), particularly Part VII, to determine what specific activities are required under each minimum control measure (MCM). For each of the six MCMs, the NYSDEC requires regulated MS4s to set measurable goals by which progress can be assessed on an annual basis. Measurable goals are a critical component of the program because they are the



Yonkers Sawmill River Daylighting project; Photo courtesy of NYS EFC.

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units by which progress is reported and compliance is assessed. Some typical examples of measurements that may be used to assess progress include the following:

- Quantity of educational materials distributed
- Number of outfalls checked for illicit discharges and percentage of total
- Number of SWPPPs reviewed and percentage approved
- Number of construction sites inspected and percentage of total in operation
- Number of stormwater management practices inspected and percentage of the total
- Number of catchbasins cleaned and percentage of the total
- Number of miles of roadway swept and percentage of total in the municipality
- Number of staff training programs and targeted departments

NOTE: For most goals, progress is assessed as either the total, the percentage of the total, or the target number achieved. Demonstrating achievement of measurable goals requires maintenance of good records for every aspect of the MS4 stormwater program. The specific measurable goals selected, and progress toward their achievement, should be documented in the annual report submitted to NYSDEC each year, as well as in the MS4 program documents maintained by responsible municipal departments and staff on a day-to-day basis throughout the year.

The NYSDEC has determined that a number of the impaired water bodies (Appendix 2 of the MS4 General Permit) that appear on the 303(d) list are impacted by pollutants specifically as a result of stormwater runoff. These pollutants generally include one or more of the following: nutrients (particularly phosphorus), silt or sediment, pathogens and floatables. If an MS4 discharges directly to a listed water body designated as impaired due to urban runoff, the municipality should focus its stormwater control program on reducing the target pollutants for that particular water body.

Municipal Staff Involvement

The Municipal Board is responsible for designating one or more individuals responsible for the stormwater program. Officially, there may be up to four individuals designated for various aspects of the program. These are listed in the Municipal Compliance Certification

portion of the Annual Report, and are described as follows:

- Principal Executive Officer, Chief Elected Official or Duly Authorized Representative
- Stormwater Management Program (SWMP) Coordinator (responsible for coordination and implementation of the Stormwater Management Program)—may not be a private consultant acting on behalf of the municipality
- Local Stormwater Public Contact (published contact who receives inquiries from the public)—may not be a private consultant acting on behalf of the municipality
- Annual Report Preparer—may be a private consultant acting on behalf of the municipality

Various technical representatives may be involved in SWPPP reviews or other activities requiring technical expertise. These may be private consultants and are not formally designated.

The responsibilities of the SWMP Coordinator may be assigned to one person (usually the Code Enforcement Officer) or divided among one or more individuals (i.e. the Clerk or Highway Superintendent may become involved in non-enforcement activities that are part of the program, including public education, preparation of the Annual Report and acting as the point of contact with the public). Many aspects of the stormwater program can be accomplished through cooperative arrangements with local agencies or other MS4s.

The duties of the SWMP Coordinator include construction site inspections and post-construction monitoring of stormwater management practices. The SWMP Coordinator provides assistance to the Planning Board in review of Stormwater Pollution Prevention Plans (SWPPPs) for development projects. While a consultant may assist with preparation of the annual report, SWPPP reviews, and the inspection of construction sites and stormwater management facilities, a consultant may not be designated as the SWMP Coordinator (this must be a municipal official). Some duties automatically fall to parties other than the SWMP Coordinator (for example, funding decisions made by the Municipal Governing Board or decisions to grant or withhold acceptance of SWPPPs made by the Planning Board).

The SWMP Coordinator also is responsible for



development and tracking of specific information to continuously evaluate the effectiveness of the stormwater program on a year-to-year basis. This may require coordination with other departments and officials to examine progress in achieving measurable goals, as well as reassessment of the goals themselves to ensure that they have been effective at controlling stormwater pollution.

Interaction between Construction General Permit and MS4 General Permit

There are two stormwater general permits that make up the Phase II program. The MS4 General Permit (SPDES GP-0-10-002) regulates stormwater discharges from the separate sewer system via the six minimum control measures. Proper regulation of construction site runoff by the municipality is required in order to maintain compliance with the MS4 General Permit.

All construction projects exceeding one acre of soil disturbance require coverage under the Statewide Construction General Permit (SPDES GP-0-10-001). It is the developer or owner of the project site that obtains this coverage. Additionally, all such projects require the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must contain a description of Best Management Practices (BMPs) to be implemented to prevent degradation of the water resources that receive runoff from the site.

This information holds true regardless of whether or not the project is located within the boundaries of a regulated MS4. If the project is located outside a regulated MS4, the developer obtains permit coverage directly from NYSDEC under the Construction General Permit, without direct involvement by the municipality. Within the jurisdictional boundaries of an MS4, permit coverage is also obtained through NYSDEC under GP-0-10-001; however, the developer must have the SWPPP for the project reviewed and accepted by the MS4's Planning Board as a prerequisite for obtaining coverage

under the statewide construction permit.

If the SWPPP is found to be acceptable to the MS4 following its review, the MS4 must issue a SWPPP Acceptance Form to the developer. The form becomes part of the developer's initial application to NYSDEC for construction permit coverage. The SWPPP Acceptance Form can be found online at the NYSDEC website, along with the Notice of Intent for coverage under the Construction General Permit, at <http://www.dec.ny.gov/chemical/43150.html>. It is the Planning Board's responsibility to ensure that adequate review of the SWPPP has taken place prior to granting acceptance by signing off on the form.

Municipalities undertaking construction projects that disturb one or more acres are required to obtain coverage under the Construction General Permit, whether or not they are regulated MS4s. The control practices selected must comply with New York State standards (the New York Standards and Specifications for Erosion and Sediment Control and the New York State Stormwater Management Design Manual).

Roles of Municipal Officials and Departments Clerk

In many regulated MS4s, the Clerk serves as the initial point of contact with the public and is responsible for addressing general questions pertaining to the stormwater program and general public outreach activities. He or she should gain a familiarity with all aspects of the program. The strategies and activities employed in each MS4 stormwater program will vary depending on specific local concerns, needs and capabilities. To determine actual components of a program, refer to the original NOI, changes documented in annual reports to NYSDEC, and any third party or intermunicipal agreements that may be in effect.

There are a number of potential ways of setting up measurable goals to quantify education efforts. Where possible, it may be advantageous to report the number of copies of a particular notice or publication that are distributed, such as through mailings or newspaper articles. The use of a display might be documented by providing a listing of the events at which the material was presented, along with an account of the target audience and approximate attendance at the event. The number of events or presentations annually can then be set as the measurable goal. The objective is to create behavior change in as many individuals as possible.

It can be challenging to determine the effectiveness

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of education efforts. The quantification of how many people have been reached is a measure of program effectiveness rather than a measurable goal. Effectiveness of an outreach program might be evaluated through the use of an attitude survey or other similar methodology.

Regulated MS4s are required to publicize contact information for the designated stormwater public contact. Citizens may occasionally voice questions or complaints related to stormwater quality or drainage issues. In many cases, the first point of contact will be the clerk, who should systematically document



Stormwater picks up litter, debris and chemicals which often end up in our waterbodies.

the inquiries and forward them to the appropriate municipal officials for resolution. Follow-up and responses should also be documented.

Municipal Governing Board

The municipal governing board—the Town Supervisor or Mayor, and the Town Board, Board of Trustees or City Council—is responsible for:

- Certifying the MS4 Annual Report and ensuring that it is completed
- Allocating the necessary funds to enable proper implementation of the stormwater program
- Ensuring that local laws relating to stormwater runoff control and illicit discharge detection and elimination have been adopted and contain the minimum control requirements specified in the MS4 General Permit

Annual Reporting for Regulated MS4s

On an annual basis, all regulated MS4s are required to prepare a report using a standard form provided

by NYSDEC on its website at: <http://www.dec.ny.gov/chemical/43150.html>. The report summarizes the progress of the program pertaining to the six minimum control measures. Regulated MS4s are required to present a draft report to the public in one of two ways—at a public hearing advertised using the standard meeting notice procedure, or on the municipality’s website. Either way, the public must have adequate opportunity to review the report and provide comments in writing prior to the report being finalized. If the MS4 chooses to present its Annual Report on the internet and subsequently receives two or more requests that a public meeting be held to further discuss the report, the MS4 must comply.

The municipality must document all comments received as part of the annual reporting process. Intended responses and follow-up actions also must be noted. The final Annual Report is due to NYSDEC on or before June 1 of each year. Following review and approval by the Municipal Governing Board, the Chief Elected Official (Principal Executive Officer) is required to sign a Municipal Compliance Certificate (MCC) as part of the annual reporting process. The MCC, which is found at the front of the Annual Report form, certifies the accuracy of all information in the report and provides a brief overall evaluation of the municipality’s progress toward compliance with program goals. The municipal governing body should review and approve the complete Annual Report prior to signing the MCC form.

Funding the Stormwater Program

Regulated MS4s are required to identify and/or develop sustainable funding sources to ensure continuous implementation of all aspects of the stormwater management program. Funding options presently available to support program implementation may include drainage districts, user fees and the general fund. The publication, “MS4 Funding Document,” is available in draft form at the NYSDEC website, and describes the formation of drainage districts and other means of funding various aspects of the stormwater program. While grant dollars are occasionally available from state or federal sources to support program objectives, grant funding is not considered to be a long-term, sustainable funding source.

Stormwater Management Local Laws and Fee Schedules

Regulated MS4s are required to adopt local laws related to stormwater runoff control and illicit discharge detection and elimination. Model laws for Stormwater Management and Erosion and Sediment Control, as well as for Illicit Discharge Detection, can also be found on NYSDEC's website. It should be noted that these laws, even if they initially followed the model law, must be regularly updated for consistency with the current construction and MS4 permit. For example, changes have recently been made concerning the determination of projects requiring municipal review, stormwater management standards and permit closure procedures.

Local laws are required under Minimum Control Measures 3, 4 and 5 of the MS4 permit. Local laws provide the municipality with the authority to review Stormwater Pollution Prevention Plans (SWPPPs) that manage runoff associated with different development proposals, and to enforce the implementation of the SWPPPs on sites during construction. Local laws grant the municipality the authority to require owners of non-stormwater discharges to designated separate storm sewer systems to disconnect those discharges.

The Municipal Board may elect to set an appropriate fee schedule for all permit applications under the stormwater management local law based upon soil disturbance area and/or the impervious area to be created in each project. An escrow account can be established for each development project. This escrow is held as bond pending the completion of stormwater management facilities and the delivery of the site to municipal ownership in properly constructed, stabilized and maintained condition.

Encouraging Intermunicipal Cooperation

Many of the responsibilities municipalities face under the MS4 General Permit are mutually similar and can be shared for greater efficiency with other regulated MS4s, particularly within the same watershed. Jointly funded public education and municipal training efforts and the sharing of equipment and staff may reduce program costs. Other services may be shared if a formal intermunicipal agreement or third party service contract exists. Such services may include program elements such as inspection of outfalls and monitoring of stormwater management practices.

Public Works Departments (Highway, Parks, Buildings and Grounds, Utilities and Sanitation)

Pollution Prevention and Good Housekeeping: All municipal departments are required to develop and implement a pollution prevention and good housekeeping program to ensure, to the maximum extent practicable, that their operations do not contribute to stormwater pollution. This requirement may have particular relevance to highway/DPW and parks departments.

Regulated MS4s are required to develop an inventory of municipal facilities and operations, identify training needs, and assess their policies, procedures and the adequacy of existing staff and equipment to meet program goals for all operation categories. A self-assessment of all municipal operations, including updates of inventories, policies and procedures where appropriate, must be completed once every three years. Policies and procedures should, to the maximum extent possible, be consistent across and among different departments. Coordination and sharing of resources, such as hydroseeders and vacuum trucks, with state and county agencies and other municipalities are encouraged.

A comprehensive pollution prevention program will include best management practices relating to the following aspects of municipal operations:

- Street and bridge maintenance
- Winter road maintenance
- Vehicle and fleet maintenance
- Stormwater drainage system maintenance
- Municipal building maintenance
- Parks and open space maintenance
- Solid waste management



Grassed ditches and culverts slow and help infiltrate water.

Stormwater Management and MS4s

- New construction or land disturbances
- Right-of-way maintenance
- Marina management (if applicable)
- Hydrologic habitat modification (i.e., stream channel and floodplain management)

Ongoing staff training is a critical aspect of the MS4



Appropriate de-icing application and road maintenance practices are a core component to municipal good housekeeping practices.

pollution prevention program. Employees must be made aware of best management practices related to all aspects of the pollution prevention program outlined.

The MS4s that operate facilities which, if not municipally owned, would be subject to the Multi-Sector General Permit for Stormwater Discharges from Industrial Activity (GP-0-06-002), can terminate coverage under the Multi-Sector Permit. Such facilities can be covered as part of their MS4 permit (thus avoiding administrative duplication). However, they are required to maintain Stormwater Management Plans for the facilities that meet the requirements of the Multi-Sector General Permit. Some common examples of such facilities include the highway garage, asphalt or concrete plants, transfer stations, landfills and bulk petroleum fueling stations. More information on the Multi-Sector General Permit can be found on the NYSDEC website at: <http://www.dec.ny.gov/>

[chemical/9009.html](http://www.dec.ny.gov/chemical/9009.html).

Services provided by outside parties that complete work on behalf of a regulated MS4 have a potential to contribute to pollution of stormwater runoff. These include turf and grounds maintenance companies, snow removal contractors, solid or hazardous waste collectors and haulers, and septic system pumpout services, as well as construction contractors who perform labor for the municipality. Regulated MS4s must include provisions in their contract documents that require third parties to comply with any applicable SPDES permit requirements pertaining to the activity that they are performing, and to utilize proper practices that will prevent their activities from causing or contributing to stormwater pollution.

For guidance on development of the municipal pollution prevention program, refer to the NYSDEC guidance document available on NYSDEC's website at: <http://www.dec.ny.gov/chemical/8695.html>. This document includes a self-assessment for municipal operations, guidance on establishing measurable goals, and numerous sources of best management practices for various aspects of municipal department operations.

The municipality must report on items identified in its original NOI, as well as additional items documented as part of the annual reporting process. Measurable goals should be set for all items reported on so that progress toward achievement of these goals can be periodically assessed. Section 1.3 of the guidance document contains information about recordkeeping and reporting of measurable goals.

Illicit Discharge Detection and Elimination: The MS4 General Permit requires that all separate storm sewer system outfalls within the regulated MS4 be inspected for dry weather flows once every five years. Inspection of at least 20 percent of existing stormwater outfalls per year will ensure this requirement is met. The inspections must be done following at least 48 consecutive hours of dry weather. Flow during dry weather is typically an indication that a discharge other than stormwater runoff is entering the system. If left unchecked, this discharge may constitute a violation of the MS4 General Permit. Other obvious indicators of non-stormwater discharges at stormwater outfalls should be noted and documented (staining, deposits, atypical turbidity or color, presence of foam or suds, unusual odors such as sewage, etc.).

Responsibility for monitoring dry weather flows often falls upon the Highway Department because it is convenient for it to perform this work in association with its daily operations. However, the task of monitoring can be assigned to another department or individual, such as the Code Enforcement Officer or a consultant, if deemed appropriate.

Upon discovery of a dry weather flow or other evidence of non-stormwater discharge, additional information should be obtained in an effort to determine the source of the discharge, if it is not readily apparent. Numerous options, including monitoring using field instruments and laboratory chemical tests, exist to assist in making this determination. Refer to the New England Interstate Water Pollution Control Commission (NEIWPCC) Illicit Discharge Detection and Elimination Manual at: http://www.neiwpcc.org/neiwpcc_docs/iddmanual.pdf.

Regulated MS4s must also map new outfalls added to the drainage system, whether due to new development, sewer separation or other reasons. Typically, the highway department is most familiar with the status of any new conveyances or points of drainage from the municipal roadway drainage system. The Highway Department may communicate this data to other departments or individuals who may be tasked with maintaining the records and maps. The municipality is required to maintain a map showing the locations of all outfalls, names of receiving waters and sewer shed boundaries (the area of land draining or contributing to the discharge of a specific outfall). While mapping is only required within the portions of the municipality formally designated as “urbanized area,” full system mapping throughout the municipality is recognized to provide long-term compliance benefits.

Post-Construction Stormwater Management: The Highway Department is generally responsible for maintenance of permanent stormwater management facilities that are deeded to the municipality, including such practices as stormwater wet detention ponds, stormwater wetlands, infiltration basins and trenches, filtration systems, swales, bioretention systems and proprietary practices. Inspection of these practices on an annual basis and after major storm events is typically performed by either the Highway Department or the Code Enforcement Officer, during which time maintenance needs are identified. Although maintenance requirements vary widely among different

types of stormwater management practices, common maintenance issues include the removal of accumulated sediment and debris, re-establishment of appropriate vegetation, and structural repairs. Appendix G of the NYS Stormwater Management Design Manual, available on the NYSDEC stormwater website, contains full details of operation and maintenance requirements and outlines items to look for during inspections. Inspection and maintenance of post-construction stormwater management practices is required for the entire municipality, not just the portion that is within the designated urbanized area.

Planning Boards and SWPPPs

Development projects that disturb one or more acres of land are subject to coverage under the Phase II Stormwater construction regulations, and require development of a Stormwater Pollution Prevention Plan (SWPPP) by the developer. The review and acceptance of SWPPPs is the responsibility of the Planning Board in regulated MS4s. (See definition of SWPPPs in next section.)

Previously, regulated MS4s only had to review SWPPPs for projects taking place within the designated urbanized area. With the update of the MS4 permit to GP-0-10-002 in April 2010, the requirement for SWPPP review was extended to the boundaries of the entire municipality, regardless of the extent of the urbanized area. For work performed in municipalities designated as regulated MS4s, the developer is required to obtain a signed SWPPP Acceptance Form from the Planning Board of the municipality in which the project is located prior to obtaining permit coverage under the Statewide Construction General Permit. Disturbance refers to actual soil disturbance (i.e., excavating, grading, and removal of rooted vegetation—not simply cutting). The following types of projects are exempt from the requirement to obtain permit coverage:

- Agricultural activity and silvicultural activity, except landing areas and log haul roads
- Routine municipal maintenance activities that disturb less than five acres and are performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility, including roadways and right-of-ways
- Repairs to any stormwater management practice or facility deemed necessary by the Stormwater Management Officer

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- Cemetery graves
 - Installation of fence, sign, telephone, and electric poles and other kinds of posts or poles
 - Emergency activity immediately necessary to protect life, property or natural resources
 - Activities of an individual engaging in home gardening by growing flowers, vegetables and other plants primarily for use by that person and his or her family
 - Landscaping and horticultural activities in connection with an existing structure
- contractors performing work
 - Site inspection reports
 - Formal maintenance agreement or dedication of permanent stormwater management facilities

All regulated MS4 Planning Boards are required to review SWPPPs under their stormwater runoff control local laws, which are adopted in compliance with the MS4 General Permit. The SWPPPs must be developed in compliance with the requirements of the General Construction Permit (available online at <http://www.dec.ny.gov/chemical/43133.html>).

SWPPP Defined

A Stormwater Pollution Prevention Plan, or SWPPP, is a document or set of documents that ensures that runoff from a particular construction site does not adversely impact receiving water resources during or following development. The SWPPP describes the project site, the scope of the project, and the best management practices to be employed to protect water resources. The SWPPP is made up of a series of components that work together to accomplish these objectives:

- Notice of Intent for coverage under Construction General Permit
 - The Construction General Permit (SPDES GP-0-10-001)
 - Erosion and Sediment Control Plan and supporting design
 - Water Quality Control Plan and supporting calculations and design
 - Water Quantity Control Plan and supporting calculations and design
 - Construction sequencing, operations and maintenance plan
 - Construction drawings, site plan, details and specifications, showing best management practices
 - Construction Site Waste Management Plan
 - Certifications by site owner/developer and all
- The requirements summarized are spelled out in greater detail in the Stormwater Management and Erosion and Sediment Control Model Local Law, available in the Guide for Local Officials on the NYSDEC website at: <http://www.dec.ny.gov/chemical/8695.html>.
 - There are two general categories of SWPPPs, and it is important to know which is required for the project that is being reviewed.

Basic SWPPP

This consists solely of an Erosion and Sediment Control Plan, developed in accordance with the New York Standards and Specifications for Erosion and Sediment Control, and a Construction Site Waste Management Plan. The Basic SWPPP is acceptable only for a limited number of projects. The following is a list of common types of projects that are exempted from the requirement to prepare a full SWPPP. These projects are only exempted if they are located outside of watersheds listed in Appendix C of the SPDES General Construction Permit (GP-0-10-001), and do not discharge directly to an impaired water body listed in Appendix E of GP-0-10-001. A full list can be found in SPDES GP-0-10-001, available on the NYSDEC stormwater website.

- Linear utility projects that do not create impervious surface
- Agricultural BMPs and buildings disturbing less than 5 acres
- Athletic fields with no associated impervious surface
- Spoil stockpiling or demolition projects where site will be revegetated
- Bicycle or walking trails
- Environmental enhancement or slope stabilization projects
- Sidewalks not associated with other improvements
- Single-family residential projects between 1 and 5 acres that result in less than 25 percent of the site in impervious area at the end of construction

Full SWPPP

This compares post-development (proposed) conditions to pre-development (existing) conditions, reduces the amount of resulting runoff from the proposed project to the maximum extent practicable, and incorporates best management practices to mitigate for hydrologic changes and addition of impervious surfaces (e.g., paved areas or rooftops). A full SWPPP contains the following data:

- Erosion and Sediment Control Plan using standard practices from the New York Standards and Specifications for Erosion and Sediment Control
- Incorporation of Runoff Reduction using the planning process in the 2010 NYS Stormwater Management Design Manual
- Treatment of the Water Quality Volume using green infrastructure practices and standard NYS DEC practices with runoff reduction capacity from 2010 NYS Stormwater Management Design Manual
- Control of the Channel Protection Volume (extended detention of the one-year, 24-hour storm)
- Overbank Flood Protection (no exceedance of the pre-development peak discharge from a 10-year, 24-hour storm)
- Extreme Flood Protection (no exceedance of the pre-development peak discharge from a 100-year, 24-hour storm)
- Construction Site Waste Management Plan



A minimum number of controls is necessary during construction.

(ensuring that debris, waste and chemicals stored at the site do not cause or contribute to stormwater pollution)

SWPPP Review and Acceptance Procedures

The Planning Board members are responsible for conducting a full administrative review of each SWPPP to ensure that all of the required components are present, and to address all planning-related components of the SWPPP (including preservation of natural resources, site layout and minimization of impervious surface to reduce runoff, and other elements specified in the NYS Stormwater Management Design Manual). The Planning Board is also required to determine whether the proposed project will comply with the requirements of the Construction General Permit. The Planning Board may rely on advice of a Professional Engineer (PE) to review and recommend acceptance of technical design information. The SWPPPs containing post-construction stormwater management practices must be reviewed by a PE or a trained individual under the supervision of a PE. The final decision to accept or reject the SWPPP is the responsibility of the Planning Board.

It is important to bear in mind that NYSDEC does not review SWPPPs for projects inside regulated MS4 areas unless other permits from NYSDEC (a Freshwater Wetlands Permit, for example) are needed. As such, the SWPPP review performed at the local level may be the only review a project undergoes. In order to protect public infrastructure, private property, and natural resources that are of intrinsic value to the community, the municipality must ensure the functionality of all stormwater management systems that are constructed. It is the Planning Board's duty to fulfill this role. In doing so, the Planning Board is encouraged to seek technical assistance where necessary to ensure that the requirements are met in accordance with the regulations. This may require the involvement of a PE or other appropriately qualified individual.

Local law enables the Planning Board to require the applicant (developer) to provide a performance bond, cash escrow, or irrevocable letter of credit from a financial institution guaranteeing satisfactory completion of the project and naming the municipality as beneficiary. The amount of the surety is determined by the municipality. The surety is released back to the developer upon satisfactory construction of



Porous pavers and bioswales adjacent to the municipal building in the Village of Greenwood Lake provide a visible demonstration project. Project funded by the Green Innovation Grant Program. Photo credits: NYS EFC.

all stormwater management practices and proper stabilization of the site, at which time the stormwater facilities are deeded to the municipality.

An alternative arrangement is possible in which the stormwater facilities are maintained in perpetuity by the developer or corporation that owns or manages them. In this case, the municipality may require the developer to provide an irrevocable letter of credit from an approved financial institution ensuring proper operation and maintenance of erosion and sediment control and stormwater management practices, both during and after construction. The municipality may draw upon this account if the practices are not properly operated or maintained, to cover maintenance, inspection and engineering costs incurred.

The NYSDEC suggests that language allowing the provisions here discussed or similar procedures, be written into the municipality's Stormwater Management and Erosion and Sediment Control Local Law. For an example, refer to Section 2 of the NYSDEC Model Stormwater Management and Erosion and Sediment Control Local Law (available on the NYSDEC website at: <http://www.dec.ny.gov/chemical/8695.html>).

Better Site Design and Green Infrastructure Practices

With the adoption of GP-0-10-002 came the requirement for the MS4 Planning Board to ensure the use of Better Site Design (BSD) principles in its review of SWPPPs. The applicant is required to demonstrate that BSD practices have been considered and utilized

wherever possible to reduce the total amount of runoff generated by a project. Once BSD practices have been fully incorporated into the design, green infrastructure practices are to be considered to treat as much of the resulting Water Quality Volume as possible. The applicant should proceed through the design process looking for opportunities to:

1. Avoid the impacts
2. Reduce the impacts
3. Minimize the impacts

These principles should be considered and implemented in this sequence and order of preference.

The BSD practices focus on minimizing overall site disturbance, preserving natural vegetation or topography, and treatment of stormwater through natural processes. Within the bounds of appropriate zoning or subdivision codes of the municipality, the Planning Board has authority to promote the use of BSD practices. The BSD should be used wherever opportunity exists to meet permit requirements in a manner that reduces reliance on engineered practices, often at a cost savings to the developer. Here are some examples:

- Preservation of natural features, sensitive resource areas, and vegetation, resulting in less clearing
- Preservation of native topography and drainage patterns, resulting in less cut and fill
- Reduction in impervious cover through narrower streets, sidewalk reduction, parking lot reduction
- Reduction of building footprints through relaxation of height restrictions
- Reduction of disturbed area through clustering, reducing required lot line setbacks
- Disconnection of impervious surfaces by routing drainage to grassed or vegetated areas
- Conveyance of drainage in open channels rather than piping it in closed conveyances

If implemented properly, BSD can reduce maintenance costs to the municipality, as well as the overall footprint of stormwater facilities. Creation of a more natural setting on the lot can also increase property values.

When opportunities to incorporate BSD (thereby avoiding or reducing the impacts) have been exhausted, the applicant must consider and incorporate the use of Green Infrastructure to address the remaining Water



Many municipalities offer free or low-cost rain barrels to residents as a public education tool but also to capture stormwater.

Quality Volume. Green Infrastructure, in the context of stormwater management, is the use of natural processes, such as plant uptake, microbial action, evapotranspiration, infiltration and filtration through soil to attenuate runoff and remove pollutants from runoff. There are many other recognized benefits of Green Infrastructure as well. The following are examples of Green Infrastructure practices:

- Rain gardens
- Stormwater planters
- Rain barrels/cisterns
- Vegetated swales
- Vegetated buffers
- Vegetated filter strips
- Tree planting
- Vegetated roofs

Redevelopment Sites

Special allowances are made when a development reuses existing partially or fully impervious sites for new projects. These allowances apply only if physical constraints or space limitations make regular design process infeasible. They may include possible waivers of flood control requirements if total impervious area on the site decreases and pre-existing drainage patterns are not altered such that peak flows increase. The Water Quality Volume treatment or runoff reduction requirements may be lowered if impervious area is reduced with soil restoration in new pervious areas, and/or runoff from disturbed areas is treated or

reduced. Chapter 9 of the NYS Stormwater Management Design Manual contains specific formulas explaining these circumstances and what reductions may be allowed.

Annual Recordkeeping and Reporting of SWPPPs: Planning Boards must maintain records of the number of SWPPPs received for review, the number accepted, and all comments received from the public along with the boards' responses.

Comprehensive Plan and Land Use Regulations

The MS4 permit requires that Planning Boards consider the use of Better Site Design, Low Impact Development and Green Infrastructure when they are developing or modifying Comprehensive Plans and other land use regulations such as open space preservation programs and watershed plans. This includes protecting sensitive natural resources such as streams, wetlands and erodible soils; maintaining natural hydrologic conditions in new development; exploring ways of reducing impervious cover; and minimizing disturbance of vegetative cover.

Code Enforcement Officer Responsibilities: Construction Site Runoff Control

The Code Enforcement Officer is responsible for inspection of sites during construction, to ensure that they comply with the terms of their SWPPPs as approved by the Planning Board. Under the previous MS4 permit, the requirement for a regulated MS4 to inspect sites applied only to the parts of the municipality within the designated urbanized area. As of May 2010 and the adoption of GP-0-10-002, the requirement to perform site inspections has been extended to the entire municipality.

The purposes of conducting site inspections are summarized as follows:

- Verify compliance with state SPDES permit and MS4 local laws
- Verify that the site is not causing water quality standards violations
- Determine whether or not SWPPP is appropriate and effective
- Verify whether SWPPP is being implemented
- Verify that inspections by the site owner or their representative are being performed properly (where required, these must be completed weekly by a qualified professional)

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- Verify that issues identified during the owner inspection are being addressed by the contractor(s)

The Code Enforcement Officer must check to ensure that the following documents are present on the site and are current and up-to-date:

- Stormwater Pollution Prevention Plan (SWPPP) certified by owner and all contractors
- Signed Notice of Intent (NOI) and SWPPP Acceptance Form
- A copy of the Construction General Permit (SPDES GP-0-10-001)
- NYSDEC Acknowledgement Letter indicating the date permit coverage begins
- Logbook documenting inspections completed by developer or developer's consultant
- Letter authorizing disturbance of greater than five acres at any one time (where applicable)
- As of June 2010, documentation that all contractors have fulfilled site runoff control training requirements

The site is also thoroughly inspected to ensure that all work is being completed in compliance with the SWPPP, and to see that any potential for water quality violations is immediately addressed and eliminated. The developer is required to notify the regulated MS4 at each of the following stages, at which time the Code Enforcement Officer may opt, at his or her discretion, to inspect the site:

- Start of construction
- Installation of sediment and erosion control measures
- Completion of site clearing
- Completion of rough grading
- Completion of final grading
- Close of the construction season
- Completion of final landscaping
- Establishment of landscaping in public

areas

These are only guidelines. The NYSDEC recommends that the inspection frequency be based on public complaints, involvement of frequent violators, the amount of area simultaneously disturbed, proximity to sensitive water resources and similar concerns.

The Building Code of the municipality grants the Code Enforcement Officer the authority to access the site. It is suggested that the Stormwater Management and Erosion and Sediment Control Local Law require the developer to allow the municipality Right of Entry whenever a connection is made between a stormwater management facility and the public drainage system. It is recommended that the Code Enforcement Officer conduct the first site inspection as an informational visit to educate the site operator regarding the requirements. The first inspection is also an opportunity for the CEO to familiarize himself or herself with the project and any site-specific issues. If conditions threatening an imminent water quality violation are present, all work should be stopped immediately except that which is necessary to prevent or cease the violation. However, enforcement action should otherwise be escalated gradually unless flagrant non-compliance is discovered. Due to the dynamic nature of construction site work, minor repair issues will inevitably be present and should be addressed, but may not require site shutdown.



Lindenhurst Library Porous Paver Parking Lot. Photo credits: RDA/RSLA Landscape Architects.

The NYSDEC recommends that Code Enforcement Officers be granted the authority to issue notices of violation, stop work orders and fines based on the process identified in the Stormwater Management Local Law. Upon the finding of a violation, the general procedure is to issue a stop work order describing, in writing, the nature of the violation. Further work, aside from stabilization of the site and correction of the problem, is not allowed to proceed until the violation is resolved through appropriate corrective actions. In the event that the stop work order is ignored, the local law should grant the municipality the authority to pursue further injunctions, including fines and imprisonment, against the violator. Certificates of Occupancy may be denied or withheld if buildings are constructed prior to resolution of the violation.

At the end of a construction project, the developer must file a Notice of Termination (NOT) with NYSDEC in order to close his or her permit coverage under the Construction General Permit. In regulated MS4 areas, it is the responsibility of the Code Enforcement Officer to ensure that the site is stabilized in compliance with the permit prior to the NOT filing. The following must occur before the permit can be closed:

- Site must be fully stabilized — meaning uniform permanent vegetative cover established over all portions of the site at 80 percent density—no bare areas
- Post-construction controls installed and functioning
- Temporary erosion and sediment control devices removed and/or replaced with permanent practices

In May 2010, a new requirement went into effect mandating that the chief elected official or duly authorized representative of a designated MS4 must sign off on the NOT for all projects occurring within the municipality, unless the MS4 itself is the applicant.

In addition, responsibility for maintenance of any permanent post-construction stormwater management practices must be established. In many cases, it is the municipality that will be maintaining these practices (stormwater detention ponds, bioswales, filtration devices, pervious pavement, etc.). Consequently, it is of utmost importance that the practices be installed in accordance with the approved SWPPP and be fully

functional before the NOT can be filed. The practices will become the municipality's responsibility and cost. The local Highway Department is typically involved in maintaining permanent stormwater management facilities, but the Code Enforcement Officer may be responsible for regular inspection of the practices.

While most SWPPPs are reviewed by the Planning Board, the Code Enforcement Officer or Director of Planning and Development must review SWPPPs for projects that are not subject to Planning Board authority (e.g., Subdivision Review or Site Plan Review). These generally include projects such as individual single-family homes, agricultural projects, linear



This green roof on the Syracuse Center of Excellence retains stormwater, effectively increasing system capacity.

roadway projects or utilities in the absence of any other associated improvements, or similar projects.

Code Enforcement Officers are required to obtain training through a program sponsored or approved by NYSDEC to ensure that they understand NYSDEC's erosion and sediment control requirements as well as any local requirements that may be more stringent than those endorsed by NYSDEC. In New York State, Soil and Water Conservation Districts (SWCD) are designated as being able to provide erosion and sediment control training on behalf of NYSDEC. Check with the local SWCD office for an upcoming training schedule, or visit the NYSDEC website at: <http://www.dec.ny.gov/chemical/8699.html> for a calendar of training events.

Illicit Discharge Detection and Elimination: Under the regulated MS4's Illicit Discharge Detection and Elimination (IDDE) Local Law, the Code Enforcement

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Officer is typically responsible for issuing notices of violation for illicit discharges. Highway Department/DPW staffs often play a major role in outfall monitoring as a function of their day-to-day responsibilities. Illicit discharges may be identified during dry weather outfall monitoring, discovered during compliance investigations, or found by other means. The Code Enforcement Officer may need to assist the Highway Department in tracing illicit discharges if it is apparent that the source of the illicit discharge is, for example, a cross-connection of a drain originating on private property to a separate storm sewer system.

Several types of non-stormwater discharges are considered “exempt” from the regulations as long as they are not substantial contributors of pollutants to a separate storm sewer system. These include types of discharges that are typically “clean,” such as:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated groundwater or groundwater infiltration
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensate
- Irrigation water
- Springs
- Water from crawl space and basement sump pumps
- Footing drains
- Lawn/landscape watering if all pesticides and fertilizers have been applied in accordance with manufacturer’s label
- Water from individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Residual street wash water
- Discharges/flows from firefighting activities
- Dechlorinated water reservoir discharges
- Any SPDES permitted discharges

It is the Code Enforcement Officer’s responsibility to maintain a list of which types of non-stormwater discharges are permitted to enter the MS4 because they are considered not to be significant sources of pollutants of concern.

The NYSDEC has recommended that the IDDE Local

Law contain a mechanism to require that all property owners must allow the Stormwater Management Officer (SWMP Coordinator) access to the premises within a reasonable timeframe following inquiry or for the purposes of due enforcement, and further allows pursuit of a search warrant in the event that such access is denied. This extends to allow the SWMP Coordinator to set up sampling or monitoring equipment, perform dye tests or other activities as necessary to investigate a potential illicit discharge.

The opportunity for voluntary compliance allows, in lieu of a civil penalty, public services outlined in the law for first-time violators. These may include storm drain stenciling, stream cleanups, or other education or participation activities that may contribute to the stormwater program of the municipality. The first priority is always to cease and ameliorate the illicit discharge or connection, rather than to focus on punishing the violator.

Regulated MS4s must maintain a map of all stormwater outfalls and their associated drainage areas to those outfalls (i.e., sewersheds). The Code Enforcement Officer may be involved in this process, and should coordinate with the Highway Department or other parties for updated information.

Annual Recordkeeping and Reporting: The Code Enforcement Officer must maintain records of all site inspections for annual reporting purposes. Records are also maintained concerning efforts to identify and eliminate illicit discharges.

This chapter prepared by the Central New York Regional Planning and Development Board.

