Western New York Stormwater Coalition: Compliance through Collaboration

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The Erie County Department of Environment and Planning initiated a regional strategy to assist the local municipal governments from Erie and Niagara Counties in understanding and complying with the U.S. Environmental Protection Agency's (EPA) Phase II Stormwater regulations. This strategy included formation of the Western New York Stormwater Coalition (WNYSC), a group consisting of representatives of Erie County, Niagara County, several local and state government agencies, 41 regulated municipalities and environmental consultants. For the past six years, the members of the Coalition have met on a monthly basis to collaborate on the development and implementation of a comprehensive Stormwater Management Plan. The Coalition utilizes a workgroup format to address the six minimum controls that the regulations require. Each workgroup is responsible for their respective components of the Stormwater Management Plan. To date, development and implementation of the Stormwater Management Plan is an unfunded mandate. The formation of the Western New York Stormwater Coalition provides an opportunity for the regulated communities to share resources and work in partnership toward compliance with the Phase II Stormwater requirements. The Coalition recently partnered with Buffalo State, State University of New York, in obtaining funding from

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the U.S. EPA to conduct a demonstration crackdown of illicit connections to the stormwater system. The experiences of the Coalition in dealing with the unfunded stormwater mandate is discussed, including the development of a cost-effective crackdown program. As Chastant (2005) notes, state and federal regulations are imposing stricter control on stormwater quality and quantity and to help meet many of these unfunded mandates it can be helpful to share local ideas and experiences. Tucker and Harrison (2006) emphasize that there is good potential for cost savings when local governments can work in partnership to implement control measures required in the stormwater permit.

7.1 Program Description

7.1.1 Background and Regulatory Need

Over the past 30 years municipal stormwater management has experienced an important paradigm shift, evolving from an urban flood control function, to a water and resource management function, to an environmental protection and regulatory function (Tucker and Harrison, 2006). Municipal stormwater management increasingly is thought of as an element of a comprehensive, integrated urban water resource management service that may have a watershed focus (U.S. EPA, 2000; Clarkson, 2003; Stark, 2003; Tucker and Harrison, 2006).

In 1972, U.S. Congress passed the Federal Water Pollution Control Act Amendments (the Clean Water Act) that established the National Pollutant Discharge Elimination System (NPDES) in an effort to provide a standardized permit program to address point source discharges. Once the U.S. EPA approved their request, states were able to administer the State Pollutant Discharge Elimination System (SPDES) program through the appropriate state agency. Although nonpoint stormwater control was addressed in the Clean Water Act, the U.S. EPA was ineffective at implementing regulations (Willis, 2006). In the early 1980s, the Natural Resources Defense Council initiated legal proceedings that ultimately led to stormwater being defined as a point source of pollution and this marked the beginning of the municipal stormwater quality mandate (Tucker and Harrison, 2006). In part, these proceedings were supported by findings from the National Urban Runoff Program (NURP; e.g. Maestre and Pitt, 2007).

To implement the new stormwater regulations, the U.S. EPA established the “Phase I” stormwater requirements on November 16, 1990 (Federal Register, 55 FR 47990). The Phase I program required municipal separate

storm sewer systems (MS4s) located in counties or metropolitan areas with populations greater than 100,000 to obtain NPDES permit coverage, industrial facilities had to develop stormwater pollution prevention plans (SWPPPs), and construction sites of five acres or more also had to obtain an NPDES permit (U.S. EPA, 1996; Willis, 2006). In subsequent years there were various lawsuits that further shaped the Phase I regulations (Willis, 2006), but by 1998, the U.S. EPA had proposed regulations to expand the Phase I program.

Phase II of the stormwater program requires an NPDES (or in the case of New York State, a SPDES) permit and implementation of a stormwater management program for MS4s servicing populations under 100,000 in a U.S. Census-defined Urbanized Area (>1,000 people per square mile, or 400 per km²). Phase II also revised some Phase I requirements for industrial facilities (e.g. an exemption may be granted to a facility at which stored materials or industrial processes are not exposed to stormwater) and required permits for construction sites of one to five acres (0.4-2 ha) (Willis, 2006).

MS4 owners and operators subject to the Phase II Rule are required to design a stormwater management program to reduce the discharge of pollutants to the “maximum extent practicable” and protect water quality. It is understood the “maximum extent practicable” can be achieved through successful implementation of approved best management practices and the promotion of pollution prevention strategies. The stormwater management programs developed by the affected MS4s must include six minimum control measures. These complementary measures, when successfully implemented, are expected to significantly reduce the volume of pollutants discharged into receiving bodies of water.

There are 39 municipalities in Erie and Niagara County that are subject to the requirements of the Phase II Stormwater Rule. In addition, the two counties operate a number of municipal separate storm sewer systems that must comply with the Phase II regulations. Only the portions of each county that are within Urbanized Areas are subject to the regulations.

To date, development and implementation of the stormwater management program is an unfunded mandate. The formation of the Western New York Stormwater Coalition provides an opportunity for the regulated communities to share resources and work in partnership toward compliance with stormwater requirements.

7.1.2 Western New York Stormwater Coalition

The Phase II Stormwater Rule was published in the Federal Register on December 8, 1999 (64 FR 68722). The regulated municipalities were

identified in the notice. The Erie County Department of Environment and Planning (ECDEP) assumed the role of lead agency in developing a preliminary course of action and started by contacting the regulated municipalities. A meeting was convened during which the regulations were reviewed. An information network was established, primarily through e-mail and fax notifications to keep the municipalities informed of any new developments at the state or federal level. The Coalition was formally established in January 2002. From its inception, the structure of the Coalition, and decisions on how it would function and accomplish its work, were reached via consensus of the participants.

The primary objective of the Western New York Stormwater Coalition is to utilize intergovernmental cooperation to collectively meet the Phase II stormwater regulations. The timeframe for developing and fully implementing a stormwater management program was approximately five years. The regulated MS4 owner and operators were required to submit a Notice of Intent for SPDES Permit coverage for stormwater discharges by March 10, 2003 with the understanding that their stormwater management program would be fully implemented by January 8, 2008.

The clientele served through the Western New York Stormwater Coalition are 29 regulated MS4s in Erie County, ten regulated MS4s in Niagara County, two county agency MS4s and two non-traditional MS4s. Through participation in the Coalition, the regulated MS4s have worked cooperatively to develop and implement a stormwater management program that, at a minimum, meets the Phase II stormwater regulations.

7.1.3 Collaboration

The first order of business for the Coalition was to determine how to structure the organization to best meet the regulations. The Coalition members agreed a workgroup format was the best course of action. Six workgroups were created and aligned with the six minimum control measures set forth in the regulations. The workgroups are identified as follows:

- Public Education and Outreach on Stormwater Impacts and Public Involvement/Participation (two controls combined);
- Illicit Discharge Detection and Elimination;
- Construction Site Runoff Control;
- Post-construction Stormwater Management;
- Pollution Prevention/Good Housekeeping for Municipal Operations; and

- Local Ordinance Development (not an identified minimum control, but an important tool and recommendation for implementation).

The Western New York Stormwater Coalition membership comprises representatives from the MS4s, government agencies and environmental consultants. The majority of MS4 representatives were from municipal engineering departments. However, there were also quite a few members affiliated with public works, highway departments and sewerage operations. The government agencies participating were from Erie and Niagara Counties' Soil and Water Conservation Districts (SWCD), Erie County Health Department, Erie County Division of Sewerage Management, Erie County Highway Department, Niagara County Department of Public Works, New York State Department of Transportation and the State University of New York at Buffalo. Except for the SWCDs the government agencies participating were regulated MS4s. The environmental engineering consultants of the Coalition attended on behalf of the municipality they represent. At the onset, the members aligned themselves with the workgroups where their knowledge and expertise were best utilized. In this manner, the Coalition capitalized on the talents of many and regardless of the workgroup to which one belonged, a vested interest was inherent. Over the past six years, the work of the Coalition has proven to be a cooperative, intergovernmental effort. It is important to note that the monthly meetings are well attended and the accomplishments noted are those of many partners, not just a few doing the majority of the work.

7.1.4 Role of Erie County

The role of Erie County in the Coalition has been that of administrator (i.e. setting up and maintaining an e-mail and fax distribution list, preparing the agenda and handouts for the monthly meetings, writing grant proposals to obtain funding) and coordinator (i.e. managing the work of the six workgroups, distributing work products for review and approval and conducting Coalition activities). Three Erie County staff persons from the Department of Environment and Planning (DEP) participate in the Coalition by performing the aforementioned tasks and also leading three of the workgroups. The DEP is a non-regulatory public assistance agency that provides technical and non-technical support to the Western New York community. A variety of assistance programs help Erie County businesses, municipalities, citizens and institutions understand and comply with environmental standards and regulations. These programs address small

business and local government pollution prevention; solid waste management; hazardous waste management; indoor air quality and, energy efficiency. The Phase II Stormwater regulations merely expanded the scope of assistance offered by the DEP.

7.2 Stormwater Management Plan

7.2.1 Basic Framework

The first year was primarily one of planning and as such, culminated in a basic framework for the subsequent five-year program development phase. The workgroups researched the regulations to gain a thorough understanding of what was required and how best to comply. A survey of the regulated MS4s was conducted and served to identify existing programs and mechanisms that could be utilized to meet the regulations (e.g. household hazardous waste collections, municipal employee training sessions, ditch maintenance schedules, stream and roadway cleanups, etc.). The survey also assessed the needs of the regulated MS4s with regard to meeting the requirements of the regulations. Based on the results of the survey, the workgroups were able to better focus their efforts on developing their respective portions of the stormwater management plan.

By the end of the first year, the workgroups identified Best Management Practices for each minimum control measure that would meet or exceed the requirements of the Phase II stormwater regulations. The first year work culminated with a workshop in January 2003 that was designed to assist the regulated MS4s with completing their Notice of Intent (NOI) State Pollutant Discharge Elimination System (SPDES) permit applications. The workgroup leaders each presented information relevant to the NOI that the Coalition would support and fulfill in its entirety. For each minimum control measure, Best Management Practices and corresponding measurable goals were identified and determined for the five year period preceding the compliance deadline. The workgroup participants received an NOI template with the understanding that, if submitted in partnership with the Western New York Stormwater Coalition (as identified on the application), they would continue to actively contribute to development and implementation of the stormwater management plan. Ninety-nine percent (99%) of the regulated MS4s submitted NOIs in partnership with the Coalition.

The basic framework that was developed by the workgroups was transformed into a formal Stormwater Management Plan (SWMP) that

describes New York State's Phase II MS4 Stormwater Permit requirements, each of the six minimum control measures, the Best Management Practices to meet the requirements, and the measurable goals. The SWMP also identifies annual compliance responsibilities pertaining to implementation of the Best Management Practices. For each Best Management Practice, the responsibility is delegated to the MS4, the Coalition, or in some cases, both parties.

7.2.2 Minimum Control Measure 1: Public Education and Outreach on Stormwater Impacts

The primary requirement for the public education minimum control measure is to plan and conduct an ongoing public education and outreach program. To fulfill the requirement the MS4s identified three targets: general public; small businesses; and, construction activities. A variety of public education materials were developed to reach the general public at the household level. Among the materials developed were a Household Guide to Preventing Stormwater Pollution, a poster addressing proper disposal of household hazardous waste, a web page, a classroom education packet developed for teachers and a public education poster display. For the small business audience, the Coalition members identified nine targets: pools, fountains and spas; mobile cleaners; hospitals and healthcare facilities; restaurants and food service vendors; automotive repair facilities; concrete and mortar operations; roadway and paving; pesticide application, landscaping and nurseries; and, construction sites. A brochure addressing stormwater pollution prevention specific to each type of business activity was developed. The public education materials are available on the WNYSC webpage (www.erie.gov/environment/compliance/pollution_sw2.asp).

7.2.3 Minimum Control Measure 2: Public Involvement and Participation

The public involvement and participation minimum control measure is designed to engage the public in the stormwater management programs of the individual MS4s. The requirements to fulfill this minimum control measure are to: seek public comment on the annual report and the SWMP; and, engage citizen volunteer groups in stormwater pollution prevention activities. A variety of methods are employed to attain public comment on the WNYSC's annual report. Foremost, the MS4s are required to put the Annual Report on the agenda of a municipal board meeting that is open to the public and identify it as a document that is available for public comment.

All New York State open meeting rules and requirements must be followed. Additional outreach to solicit public comment is conducted by Erie County on behalf of the entire WNYSC membership. These efforts include public education presentations at public libraries, posting the Annual Report on the WNYSC website and direct contact with the MS4s' Conservation Advisory Committees.

Citizen volunteer groups are utilized for two community-wide stream and roadway clean up events per year. The clean up activities are in partnership with the Buffalo Niagara Riverkeeper, a non-profit environmental organization with a volunteer network established throughout the two counties (www.bnriverkeeper.org).

7.2.4 Minimum Control Measure 3: Illicit Discharge Detection and Elimination

The primary requirement to meet the illicit discharge detection and elimination control measure is to develop, implement and enforce a program to detect and eliminate illicit discharges into the municipal storm sewer system. Additional requirements are to: develop and maintain a map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls; prohibit through ordinance, or other regulatory mechanism, illicit discharges into the storm sewer system; implement appropriate enforcement procedures and actions; develop and implement a program to detect and address non-stormwater discharges, including illegal dumping, to the system; and, inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

The Coalition hired a consultant to map all outfalls in the Urbanized Areas of both Erie and Niagara County. A total of 5,201 outfalls were mapped. A web-based mapping program was developed for MS4s and the general public to access the data for the outfalls mapped (www.gis1.erie.gov/website/ENSSO/viewer.htm). The mapping project served to provide MS4s with their first round of required outfall inspections. In addition, the dry weather inspection details provided MS4s with observation data to prioritize their outfalls for follow up investigations and the next round of inspections. See Figure 7.1 for a screen shot of the outfall mapper.

Figure 7.1 WNYSC outfall locator screen capture.

To fulfill the requirement to enact legislation to support their illicit discharge programs, the municipalities opted to implement New York State's Model Local Law to Prohibit Illicit Discharges, Activities and Connections to Separate Storm Sewer Systems. The purpose of the law is to establish methods for controlling the introduction of pollutants into the MS4. The law gives the MS4s legal authority to conduct all inspection, surveillance and monitoring procedures necessary to ensure compliance. The public education minimum control measure complements the law as it promotes public awareness of the hazards involved in the improper discharge of pollutants into the MS4.

The development of procedures to identify, track down and eliminate illicit discharges to the MS4 was accomplished through a grant awarded to Buffalo State, State University of New York to conduct a demonstration crackdown of illicit connections to stormsewer systems. Five MS4s and a special entity (Buffalo State campus) volunteered to participate in the study.

The MS4s prioritized their outfalls based on previous inspections, generally selecting ten each for the project (one MS4 selected 20). Criteria for selecting outfalls for the project included: observed flow in the initial mapping phase; land use (industrial, commercial, and construction areas

given priority); presence of environmentally sensitive areas downstream of the outfall; existence of repeated complaints for the outfall; observed structural damage (based on initial mapping); locations identified from ambient sampling (if it exists); and outfalls located in older areas of the municipality.

A six step process was used to conduct the trackdown investigations. First, a visual inspection of the outfalls was conducted. An Outfall Reconnaissance Inventory (ORI) Field Sheet, developed by Pitt (2004) and field-tested in this project, was completed for each outfall to verify the location and data previously collected and to measure the rate of flow. In addition to providing QA/QC on the data, previously collected and mapped by the consultant (see Figure 7.1 for WNYSC Outfall Locator screen capture), the visual inspection allowed rapid determination of the potential need for further investigation. Among the MS4s, 20%-67% of the outfalls inventoried had observed flow with rates between 0.8 and 43 L/min. Because of the outfall prioritization criteria discussed previously it is expected that the percentage of flowing outfalls observed for this particular demonstration project may overestimate the municipal-wide percentage of flowing outfalls. The visual inspections, and follow up trackdown procedures, are routinely done in the summer when groundwater inputs are likely minimized. A 72 h antecedent dry period prior to the inspection was used as a guideline to minimize the possibility of groundwater input. Stark (2007) used a similar antecedent dry weather period for their illicit discharge detection work. The data obtained during the ORI is used to rank each outfall as Unlikely (i.e. no illicit connection); Potential (possible illicit connection); Suspect (greater possibility of illicit connection); or Obvious (clearly an illicit connection problem). The rankings are based on the presence and relative severity of several indicator conditions: (i) Flowing Outfalls – flow, odor, color, turbidity, presence of floatables; and (ii) Physical Indicators (both flowing and non-flowing outfalls) – outfall damage, deposits/stains, abnormal vegetation, poor pool quality, pipe benthic growth.

The outfalls ranked as “Potential” or higher required further investigation beginning with sampling. As was required for the visual inspection, a 72 h antecedent dry period was observed beforehand. Two one liter samples were collected for the outfalls sampled. Sample bottles were certified clean, wide mouth, 1 liter amber glass. All sample bottles and collection devices were rinsed with flow to condition them prior to collecting flow. When possible, sample flow was collected directly into the sample bottle. Otherwise, devices used to collect flow included a dipper, bailer or bucket sampler

depending on access. The sample bottles were labeled either “on site” or “laboratory”.

Dissolved oxygen, pH, BOD₅ and temperature were measured from the “on site” bottle. From the “laboratory” bottle, 1 mL of sample was extracted with a sterile, disposable pipette and placed in Coliscan Easygel growth media for *E. coli* analysis. The sample remaining in that bottle was placed on ice in a cooler. Further analysis was conducted back at the laboratory within a maximum of six hours from the time of collection. The sample parameters and analytical methods were selected through a review of Pitt (2004), Pomeroy et al. (1996), and through Buffalo State’s own experience in evaluating water quality with community groups (e.g. <http://www.buffalostate.edu/orgs/aqua/>; Irvine et al., 2004; Wills and Irvine, 1996). The guiding principle for the sampling program is to assess meaningful parameters that can be analyzed easily and inexpensively (particularly important for municipalities with limited resources) with reasonable accuracy. Laboratory methodologies are not described in detail here, but are documented fully in Irvine and Vermette (in prep.). See Table 7.1 for parameters selected for laboratory analysis.

Table 7.1 Laboratory analysis parameters.

Parameter	Analytical Method	Parameter	Analytical Method
Dissolved oxygen	CHEMetrics, Indigo Carmine	Potassium	Turbidimetric method, Hanna colorimeter
BOD ₅	CHEMetrics, Indigo Carmine	Total Dissolved Solids	Oakton Instruments, TDSTestr
Water temperature	Thermometer	Detergents	CHEMetrics, methylene blue
pH	pHydrion, one drop indicator	Phenols	CHEMetrics, 4-Aminoantipyrine
Hardness	Aquarium Pharm. (Ca.&Mg. titration)	Pesticides	Nat. Safety Prod. (atrazine and simazine)
Turbidity	Cole Parmer, titration	Petroleum	Hanby Environmental Labs
Suspended Solids	Filtration (0.45 µ filters)	Fluoride	SPADNS, Hanna colorimeter
Nitrate	CHEMetrics, Cadmium Reduction	Chlorine	DPD, Hanna colorimeter
Phosphate	CHEMetrics, Indigo Carmine	Chromium	Diphenylcarbo-hydrazide, Hanna colorimeter
<i>E. coli</i>	Coliscan Easygel		
Ammonia	Nessler method, Hanna colorimeter	Copper	Bicinchoninate, Hanna colorimeter

Once the laboratory results were completed, the need for a trackdown investigation was determined. To assist in this determination, the flow chart method, enhanced with industrial benchmark data (when appropriate) was used, as recommended by Pitt (2004). The flow chart method is summarized in Figure 7.2. For outfalls that have a large number of industrial sites, additional indicator parameters to those shown in Table 7.1 may be needed because industrial discharges may not be composed of sewage or wastewater (e.g. industrial process water or wash down water from a floor drain). Pitt (2004) identified seven parameters that can be used as industrial flow benchmarks and these are summarized in Table 7.2. Additional benchmarks may be developed as the demonstration project progresses.

Additional sampling to trackdown the source was conducted when the sample results indicated a potential illicit connection. Sewer and landuse maps were examined to identify the contributing area and its characteristics. To narrow down the contributing area of the illicit discharge, additional field inspections were conducted. Working back from the outfall, key access junctions were examined to visually determine the presence or absence of flow. Contributing areas having no flow were eliminated from further consideration.

Figure 7.2 Flow chart method for trackdown (Pitt, 2004).

Table 7.2 Industrial Benchmark Concentrations (Pitt, 2004).

Indicator Parameter	Benchmark Concentration	Notes
Ammonia (mg/L)	≥ 50	Existing “Flow Chart” parameter Concentrations higher than the benchmark can identify a few industrial discharges
Color (units)	≥ 500	Supplemental parameter that identifies a few specific industrial discharges; should be refined with local data
Conductivity ($\mu\text{S}/\text{cm}$)	$\geq 2,000$	Identifies a few industrial discharges May be useful to distinguish between industrial sources
Hardness (mg/L as CaCO_3)	≤ 10 $\geq 2,000$	Identifies a few industrial discharges May be useful to distinguish between industrial sources
pH (units)	≤ 5	Only captures a few industrial discharges High pH values also may indicate an industrial discharge but residential wash waters also can have high pH
Potassium (mg/L)	≥ 20	Existing “Flow Chart” parameter Excellent indicator of a broad range of industrial discharges
Turbidity (NTU)	$\geq 1,000$	Supplemental parameter that identifies a few specific

Once the “flow contributing area” was determined, the trackdown procedure followed two possible approaches. It was only necessary to use one of the approaches, although both approaches used in tandem may be employed to provide more certain results. The first approach was to progressively sample up-pipe at manholes or other access points. Samples were collected and analyzed and assessed following the standard protocol and procedures. The presence of one or more indicators along with the

examination of land use maps, were used to suggest a contributing source. If no indicator was apparent from the lab tests, a groundwater source may be considered. The second approach entails use of a sewer camera to pinpoint the discharge.

Once the illicit discharge was identified and the suspected source determined, actions to eliminate it were left to the individual MS4s. Simply put, from the perspective of Erie County and Buffalo State College, the trackdown investigation was completed.

Buffalo State conducted a training for the MS4s on the trackdown protocol and sampling procedures. Two MS4s that participated in year one of the demonstration project, the Town of Orchard Park and Buffalo State, presented their individual results as part of the training. The demonstration project will continue through fall 2008. The trackdown protocol and sampling procedures will be refined as needed and a field guide will be developed. Additional grant funding has been secured from the New York State Department of Environmental Conservation (NYSDEC) to purchase outfall sampling kits and conduct field training on the trackdown protocol and sampling procedures.

7.2.5 Minimum Control Measure 4: Construction Site Runoff Control

The Construction Site Runoff Control Minimum Control Measure requires the MS4 to develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to 1 acre (0.4 ha). Control of stormwater discharges from construction activity disturbing less than 1 acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb 1 acre or more or if required by the NYSDEC.

For the MS4, Construction Site Runoff Control is accomplished through enforcement of the SPDES General Permit for Construction Activities for all projects within their respective Urbanized Areas. In order to acquire the authority to do so, the MS4s enacted New York State's Model Local Law for Erosion and Sediment Control. The purpose of the law is to minimize pollution caused by stormwater runoff from land development activities which would degrade local water quality. The law amends existing legislation to include provisions to reduce stormwater runoff rates and volumes, soil erosion and nonpoint source pollution through stormwater management practices. It also ensures that these management practices are properly maintained. Grant funding was secured to assist the municipalities

with implementation of both the Erosion and Sediment Control and the Illicit Discharge Detection and Elimination laws.

Fortunately, many of the requirements, such as municipal review of and public comment on construction site plans were already standard procedures within the MS4s. The site plans for regulated projects now simply include an erosion and sediment control plan and/or SWPPP. The proposed best management practices in those plans must follow the New York State Standards and Specifications for Erosion and Sediment Control (www.dec.ny.gov/docs/water_pdf/bluebook.pdf). If they deviate from the standards, they are subject to an extended review period prior to approval. Through its responsibility to enforce the Construction Permit, the MS4 will review and approve the practices prior to the permittee applying for New York State SPDES permit coverage.

The collaborative efforts of the Coalition were focused on developing educational programs and materials to assist the MS4s with implementing construction permit oversight procedures. Foremost, a Construction Site Inspection Training Program was developed to train MS4 staff on the requirements of the Construction Permit, their enforcement responsibilities as set forth in their MS4 Permits, and procedures for inspecting a construction site. The six-hour training consisted of a morning classroom session followed by a site visit to a local construction project to conduct an enforcement inspection. The Coalition partnered with the NYSDEC to develop the training materials and agenda. Additional workshops and trainings included a workshop for contractors, developers and design professionals to familiarize them with the construction permit and MS4 enforcement, and a training detailing New York State's Standards and Specifications for Erosion and Sediment Control.

7.2.6 Minimum Control Measure 5: Post-Construction Stormwater Management

The minimum control measure for post-construction management of stormwater requires the MS4s to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre (0.4 ha). This includes projects of less than 1 acre that are part of a larger common plan of development or sale, or that have been designated by the NYSDEC to protect water quality. The MS4s must develop and implement a program that includes a combination of structural and/or nonstructural management practices that will reduce the discharge of pollutants to the maximum extent practicable. At a minimum, the program

must include adoption of an ordinance or other regulatory mechanism to address post-construction runoff, measures to ensure adequate long-term operation and maintenance of management practices, including monitoring to determine whether the practices are reducing the discharge of pollutants. The program must ensure that controls are in place that would protect water quality and provide adequate resources to inspect development and re-development sites and to enforce and penalize violators.

For this minimum control measure, the structural and non-structural controls used for post-construction runoff control must follow the New York State Stormwater Management Design Manual (www.dec.ny.gov/docs/water_pdf/swdmnysswmdm.pdf). Through its responsibility to enforce the Construction Permit, the MS4 will review and approve the proposed controls prior to application for New York State SPDES permit coverage. If the controls deviate from the standards, they are subject to extensive review prior to approval. Once a construction site is permanently stabilized and a Notice of Termination is submitted, the role of the MS4 shifts to ensuring proper operation of the controls through an inspection and maintenance program.

New York State's Model Local Law for Erosion and Sediment Control includes provisions that address post-construction runoff and long-term operation and maintenance of structural and non-structural management practices. The primary objective of the post-construction provisions is to minimize, to the maximum extent practicable, the total annual volume of stormwater and its associated pollutant loading.

7.2.7 Minimum Control Measure 6: Pollution Prevention and Good Housekeeping for Municipal Operations

The Pollution Prevention and Good Housekeeping for Municipal Operations (P2/GH) minimum control measure requires the MS4 to prevent discharges from municipal operations, to follow the NYSDEC Non-Point Source Management Practices Catalog (www.dec.ny.gov/docs/water_pdf/npsmgt.pdf) and to conduct employee training. To meet the requirements, the P2/GH workgroup developed a guidance document for seventeen municipal operations: landscaping and lawn care; spill response and prevention; pest control; pet waste collection; septic system management; vehicle and equipment maintenance; vehicle and equipment washing; roadway and bridge maintenance; alternative discharge options for chlorinated water; hazardous and waste materials management; operational by products/wastes; catch basin and storm drain system cleaning; street cleaning and

maintenance; road salt storage and application; road kill composting operations; marina operations; and, construction and land disturbance. For each operation, the potential environmental impacts to stormwater were identified and an array of best management practices described. Inspection procedures, checklists and maintenance recommendations were included as well (www.erie.gov/environment/pdfs/guidance_document.pdf). Subsequent work resulted in Standard Operating Procedures (SOPs) for each of the BMPs (www.erie.gov/environment/pdfs/StwtrPPGH_SOP.pdf). For the seventeen BMPs and SOPs, employee training is fulfilled primarily through workshops organized by Erie County. Additional training by the individual MS4s is also conducted.

7.3 Future Work

The Stormwater Management Plan of the Coalition described in this chapter summarizes the program that was developed to meet the requirements of New York State's SPDES General Permit for Stormwater Discharges from MS4s (GP-02-02). The GP-02-02 expired on January 8, 2008. There will be revisions and modifications made to the SWMP to address any new requirements. The Coalition has obtained additional funding for a number of initiatives to support and/or enhance the MS4 programs.

7.3.1 Implementation of Long-Term Funding Mechanisms

Throughout the initial five-year planning and development phase and at the present time, the MS4s are funding their programs via their municipal budgets and grant resources awarded to the Coalition. It is important to note that the SWMP is not an exercise in compliance that once completed and accepted is accomplished. It is essentially a workplan to be executed annually. Public education and involvement activities are continual. Twenty percent (20%) of an MS4's outfalls are inspected yearly and, if necessary, trackdown and elimination must occur as often as needed. Enforcement of construction permits may end when an individual project site is permanently stabilized, but the post-construction controls must be inspected and maintained in perpetuity. The best management practices utilized in municipal operations are to be established as standard procedure – and all must be documented.

To ensure adequate resources in the long term, the Coalition is commissioning a feasibility study on the formation of County-wide stormwater utilities. Two stormwater utility districts will need to be

established, one in each county. At the present time, the Coalition membership is not in favor of establishing their own individual stormwater utilities due to the additional tax burden on their residents. A County-wide stormwater utility is still an additional tax, however, the economies of scale will significantly minimize the burden. The establishment of County-wide stormwater utility districts is largely dependent on support from every MS4 in the Coalition. Should the feasibility study indicate the stormwater utility is the best option to accomplish long term funding of the MS4's Stormwater Programs, Erie County DEP staff will work directly with the legislative boards of the MS4s, and their respective Coalition representatives, to assure complete understanding and confidence with their decision to create a utility district for their municipalities.

7.3.2 MS4 Permit Manager Software

The Coalition members recently purchased MS4 Permit Manager software, designed by CBI Engineering, Inc., to manage the six minimum control measures that comprise their SWMPs. The software program has been customized according to the specific requirements of the New York State MS4 Permit. At the present time, MS4s have been trained to use the program and will use it to track implementation of their best management practices throughout the year. Erie County DEP will similarly track the shared work of the Coalition and each year, at the close of the reporting period, export the data to the MS4s for their Annual Reports.

7.3.3 Public Outreach and Education Campaign

The Coalition received a grant from NYSDEC to implement a public education campaign. The Public Education workgroup, working closely with the Coalition members, will determine the content of the public education materials developed. A contractor will be hired to produce a video on stormwater pollution prevention that showcases local case studies. The video will be posted on the Coalition's webpage as well as on the MS4 websites should they opt to do so. It will be used for outreach and education at community meetings, at municipal board meetings for draft Annual Report review and on cable access channels. The public education campaign will also include a combination of public service announcements, billboards, public transportation advertisements, newspaper articles and printed materials. In addition, a wall mounted or free standing public education display will be provided to each MS4 project partner for their municipal buildings.

7.3.4 Public MS4 Program Evaluations

An MS4 compliance audit will be conducted for each MS4. The NYSDEC MS4 Audit Report Inspection Checklist will be used as well as U.S. EPA's MS4 Program Evaluation Guidance document (EPA-833-R-07-003). A detailed on-site evaluation will be conducted such that all SWMP components will be examined (i.e. overall program management, public education/participation, illicit discharge detection and elimination, construction, post-construction, pollution prevention/good housekeeping). The on-site evaluation will assess the MS4's implementation of the SWMP and, as needed, identify specific areas or issues that might require follow up in the future. A formal report will be prepared for each MS4 documenting the results of the evaluation as well as action items for attention.

7.4 Conclusions

The Western New York Stormwater Coalition provides a model of intergovernmental cooperation and coordination. The formation and success of the Coalition displays a creative approach to addressing a shared problem. Compliance with the Phase II stormwater regulations has a significant impact on local government resources. Although there are requirements that must be accomplished individually, to the maximum extent possible, the Coalition members can take credit for collective work and that which Erie County DEP conducts. The Coalition not only offers a mechanism to comply with an environmental regulation, it has resulted in a truly collaborative program with significant cost savings realized. The whole is only as good as the sum of its parts and an overwhelming majority of the partners have contributed, at the very least, their fair share of the work.

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