



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF WATERSHED MANAGEMENT

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)  
STORMWATER MANAGEMENT PROGRAM**

***PROTOCOL***

**NOTE:**

- **This is a guidance document developed by DEP and approved by EPA Region III, primarily for municipalities to use to comply with their MS4 permit requirements.**
- **This *Protocol* contains detailed plans for developing and implementing a municipal stormwater management program, including schedules and measurable goals, over a five-year period.**
- **MS4s may use all or portions of this *Protocol* to meet their permit requirements; for those requirements where the *Protocol* will not be implemented, the MS4 must develop its own plan which must be approved by DEP.**

# MS4 STORMWATER MANAGEMENT PROGRAM ***PROTOCOL***

## INTRODUCTION

### **GENERAL**

This Stormwater Management Program Protocol (“*Protocol*”) meets the six Minimum Control Measures required of municipal permittees under the Phase II NPDES Stormwater Regulations (found at 40 CFR §§ 122.26 – 123.35). The implementation of this *Protocol* by municipalities will satisfy the federal NPDES permit requirements for municipal separate storm sewer systems (“MS4s”) in those regulations, described in detail at 40 CFR §122.34.

Portions of the federal regulations, which are incorporated into Pennsylvania regulations by reference (at 25 Pa. Code § 92.2), establish six categories of Best Management Practices (“BMPs”) that must be met by permittees. These are “narrative” permit effluent limitations. Those BMPs must be designed to reduce the discharge of pollutants from MS4s to the maximum extent practicable, to protect water quality and to satisfy the appropriate requirements of the federal Clean Water Act.

The six BMP categories, also called “minimum control measures” in the federal regulations, are:

- 1) Public Education and Outreach,
- 2) Public Participation and Involvement,
- 3) Illicit Discharge Detection and Elimination,
- 4) Construction Site Runoff Control,
- 5) Post-Construction Stormwater Management in New Development and Redevelopment, and
- 6) Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance

The federal regulations provide flexibility within those six categories of BMPs. Each municipal stormwater program must be approved by DEP. This *Protocol* contains DEP’s recommended and approved approach to each one of the BMPs.

If a permittee commits to implementing the provisions of this *Protocol* for any Minimum Control Measure (e.g., Construction Site Runoff Control), it does not need an independent review and approval of its stormwater management program by DEP for that Minimum Control Measure.

Where a permittee elects to develop its own program for a Minimum Control Measure, DEP review and approval is required (see the General Permit “Notice of Intent” form and Instructions).

***The DEP Protocol contains detailed plans for meeting the permit requirements, with schedules and measurable goals.*** These schedules will be modified in large part, allowing additional time for compliance, for municipalities who choose to follow a watershed-based approach implementing a DEP-approved Act 167 Plan (or other watershed-based approach approved by DEP).

DEP has developed a General Permit to streamline the permitting process (“PAG-13”). In addition, DEP has several existing programs already in place that municipalities can use to meet some of their permit requirements.

### **USE OF EQUIVALENT STATE AND LOCAL PROGRAMS TO IMPLEMENT (AND FUND) MS4 MINIMUM CONTROL MEASURES**

The federal regulations allow DEP and permittees to use existing qualifying state and local programs to satisfy any of the NPDES General Permit requirements of MS4s (at 40 CFR §122.34(c)). Pennsylvania has several existing programs that can be used by municipalities to meet many of their permit requirements.

**First**, the Pennsylvania Stormwater Management Act (“Act 167”), 32 P.S. §§ 680.1 *et seq.*, already requires counties and municipalities to develop and implement stormwater management programs, on a watershed-by-watershed basis. The county applies to DEP for project approval, and proceeds in developing the watershed plan with the assistance of the municipalities in the watershed.

This legal requirement also allows for 75% cost-share funding for both planning and implementation under guidelines established by DEP. The local cost-share can be met, in part, by in-kind service.

Act 167 authorizes *funding* for all of the elements required by the federal regulations. DEP will work with counties and municipalities on appropriate funding parameters to meet the MS4 permit requirements, depending on availability of appropriated funds. This is discussed further in *Appendix 3* to the MS4 permit materials.

Many municipalities are implementing DEP-approved Act 167 plans now, and others are under development. While existing Act 167 plans (and municipal ordinances) will need to be updated to meet the MS4 requirements, these municipalities are in good position to use Act 167 to assist with the MS4 permit requirements.

**Second**, DEP implements an erosion and sediment pollution control program for any earth disturbance activities statewide. Frequently this is done in concert with the County Conservation Districts (CCDs). Under that statewide regulatory program, persons proposing or conducting earth disturbance activities are required to develop an Erosion and Sediment Control Plan ("E&S Plan") containing BMPs which minimize the potential for accelerated erosion and sedimentation during construction.

These BMPs will satisfy one of the six categories of BMPs required by the federal storm water regulations—*Construction Site Runoff Control*. However, MS4s must have a procedure for site plan review.

For activities involving one acre to less than five acres of earth disturbance with a "point source" discharge (or 5 acres or more regardless of the discharge), an NPDES permit is also required. That permit requires, among other things, the identification of permanent post-construction stormwater management BMPs (see the next section); it also entails DEP or County Conservation District review of E&S Plans.

In addition, a municipality or county may not issue a building or other permit or final approval, to those proposing or conducting earth disturbance activities, until the required NPDES permit (or approved coverage under a General NPDES Permit) has been issued.

Furthermore, under the Conservation District Law, DEP may delegate, by written agreement, the administration and enforcement of the Erosion and Sediment Control Program to a CCD if the CCD has adequate and qualified staff to implement the program. In addition, municipalities can develop working agreements with CCDs to implement municipal responsibilities for erosion and sediment control programs, stormwater management plans or other related activities.

CCDs delegated to implement the NPDES stormwater construction programs receive both permit fees and an annual appropriation to cover the costs of implementation of the program. CCDs can also charge fees for the review of plans for construction and post construction BMPs as well as other stormwater management plans.

Municipalities are not required to utilize the services of the local CCD, and CCDs are not mandated to participate in this process. However, these state and local programs do provide an opportunity for municipalities to utilize existing legal mechanisms to meet these portions of the permit requirements, and for CCDs to maintain their service program in the local community.

**Third**, DEP implements an NPDES Construction Permit program that addresses post-construction stormwater impacts statewide. Persons proposing or conducting earth disturbance activities are required to develop a Post-Construction Stormwater Management Plan (PCSM Plan) containing BMPs which protect, maintain, reclaim and restore water quality and the existing and designated uses of surface waters of the Commonwealth.

These BMPs will satisfy one of the six categories of BMPs required by the federal storm water regulations—*Post-Construction Stormwater Management in New Development and Redevelopment*.

The PCSM Plan is subject to a detailed review by DEP in "Special Protection" watersheds and in other circumstances where an "Individual Permit" is issued by DEP. When DEP issues approvals under its statewide General Permit for Stormwater Discharges Associated with Construction Activities (PAG-2), a detailed site plan review may not be conducted.

In many watersheds, municipalities can utilize this statewide program by requiring proof of the NPDES permit, with post-construction BMPs, prior to issuing a building or other permit or final approval, to those proposing or conducting earth disturbance activities. However, where the general NPDES permit coverage (PAG-2) is authorized without a site plan review by DEP, the municipality will need to conduct that review to ensure that water quality requirements are met.

To effectively use these existing regulatory programs to meet MS4 requirements, municipalities should have a municipal ordinance and a mechanism that requires review and approval of construction and post construction BMPs for earth disturbance activities equal to or greater than one acre. An agreement with the CCD is one good approach to meeting this requirement for the construction requirements.

## OTHER RESOURCES

1. CD-ROM with DEP Supplied Resource Materials for MS4s

For many of the six minimum control measures, DEP has developed a set of resource materials for municipalities. Educational materials, public participation plan outlines and many other useful materials are available on CD-ROM from your local DEP regional office, as well as on-line on the DEP website ([www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater").

2. DEP Pollution Prevention Assistance

DEP has headquarters and regional office staff available for pollution prevention assistance and guidance. Contact your regional office or visit the DEP website ([www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "Pollution Prevention").

## USING THIS *PROTOCOL* TO MEET PERMIT REQUIREMENTS

Municipal MS4s can commit to implementing all or part of this *Protocol* to meet the permit requirements. To the extent that an applicant adopts all or a portion of the *Protocol*, it becomes a part of the applicant's Authorization to Discharge and permit coverage under the Permit. This includes any commitment to implement a DEP-approved Act 167 plan (or other plan approved by DEP not under Act 167) for the watershed in which the MS4 is located. Lack of Act 167 funding does not diminish the permittee's responsibility to comply with the General Permit.

**MS4 STORMWATER MANAGEMENT PROGRAM *PROTOCOL***  
***PUBLIC EDUCATION AND OUTREACH***  
**MINIMUM CONTROL MEASURE**

**Summary of Components of This Minimum Control Measure:**

- Develop a Public Education Plan
- Implement the Plan, including dissemination of educational materials (including those provided by DEP) to appropriate target audiences

<i>PERMIT</i>  <i>YEAR</i>	<i>SUMMARY OF MINIMUM MEASURE</i>  <i>PERMIT REQUIREMENTS</i>	
	<b>Education Plan</b>	<b>Educational Program</b>
Year 1	Determine Target Audience Develop Public Education Plan	<ul style="list-style-type: none"> <li>• Disseminate materials to all target audiences using appropriate distribution channels</li> <li>• Newspaper advertisement</li> <li>• Other components of Plan</li> </ul>
Year 2	Implement the plan Revise Plan as needed	<ul style="list-style-type: none"> <li>• Disseminate materials to all target audiences using appropriate distribution channels</li> <li>• Newspaper advertisement</li> <li>• Other components of Plan</li> </ul>
Year 3	Implement the plan Revise Plan as needed	<ul style="list-style-type: none"> <li>• Disseminate materials to all target audiences using appropriate distribution channels</li> <li>• Newspaper advertisement</li> <li>• Other components of Plan</li> </ul>
Year 4	Implement the plan Revise Plan as needed	<ul style="list-style-type: none"> <li>• Disseminate materials to all target audiences using appropriate distribution channels</li> <li>• Newspaper advertisement</li> <li>• Other components of Plan</li> </ul>
Year 5	Implement the plan Revise Plan as needed	<ul style="list-style-type: none"> <li>• Disseminate materials to all target audiences using appropriate distribution channels</li> <li>• Newspaper advertisement</li> <li>• Other components of Plan</li> </ul>

**PUBLIC EDUCATION PLAN**

**What Does This Section Address?**

This section addresses developing a Public Education and Outreach Plan that will assist you in effectively implementing your public education program.

Your public education plan must target the key audiences of 1) homeowners; 2) business owners; and 3) developers. If you effectively educate them on the connection between their actions, stormwater runoff, and water quality, they will most likely have a positive impact on your stormwater management efforts. Your target audiences are also stakeholders since they have the ability to impede or assist you in implementing your stormwater management program.

**DEP has developed the educational materials that you will need to implement a public education program;** your job is to figure out the best ways to get these materials to your target audiences.

**What Do I Need to Do and By When?**

Follow the schedule in this Minimum Control Measure, shown above.

Your first goal will be to decide how to reach your target audiences. You have three categories of target audiences that you will need to reach: 1) existing homeowners; 2) existing business owners; and 3) developers. The people that comprise each of these groups have the potential to impact the quality of stormwater in your community.

By the end of Year 1, you should have a comprehensive plan in place that will help you tap into your target audiences' existing communication channels to inform them about improving stormwater quality. During the following permit years, you will update your plan to ensure information about your target audiences is accurate. To accomplish this, complete the following tasks:

### **Year 1: Develop A Public Education Plan**

Complete the public education portion of the plan template.

A template for a plan is included in the References and Resources accompanying this *Protocol* (provided on CD to the municipality, and available on the DEP website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater").

Collect information on your three target audience categories. You may use the worksheet provided in the References and Resources. . The questions contained in the template will help you become familiar with the communication channels most used by each target audience. Through this activity, you will create a comprehensive inventory of the newsletters, newspapers, web sites, meetings, magazines, organizations, associations, etc. used by your target audiences.

### **Years 2, 3, 4 and 5: Update Target Audience Information**

Review your plan and provide new information about your target audiences and their communication channels.

During the remaining years of your permit, you are responsible for ensuring that information in your plan is accurate and current. Your target audiences may expand (or condense) in size during the course of a permit year. Ways of communicating may also change from year to year. As you learn of new communication channels (e.g., newsletters, web sites, meetings, etc.), enter this information into your plan and modify your strategies for distributing educational materials. New information will help you to leverage resources for distributing educational materials.

## **EDUCATIONAL PROGRAM IMPLEMENTATION**

### **What Does This Section Address?**

This section provides information on conducting an educational program for the three primary target audience categories in your community. The program focuses on distributing the educational materials provided by DEP that contain messages related to your storm water management program.

Implementing this educational program will also help you to meet your permit requirements for other Minimum Control Measures that also have public education components. These minimum measures include Illicit Discharge Detection and Elimination; Construction Storm Water Runoff Management; and Pollution Prevention and Good Housekeeping for Municipal Operations and Maintenance.

You will find the educational materials needed to implement your educational program under the References and Resources contained in the DEP CD-ROM provided to you, and available on the DEP website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater."

### **What Do I Need to Do and By When?**

There are two phases of educational outreach. During the first stage, you focus on raising the awareness of your target audiences. In the second stage, you educate the target audiences about the problems and potential solutions.

These stages of educational outreach will drive the schedule for your educational program, along with the assumption that most people do not know 1) what storm water is and 2) how stormwater affects water quality.

Your permit requirements lay out the "what" and "when" of this minimum measure component; what it does not do is specify the "how." How you will distribute the educational materials to the specified target audiences is up to you. Use your Public Education Plan to determine the most effective means of getting educational materials into the hands of your target audiences.

Any additional educational activities not listed here may be used to show compliance with this Minimum Control Measure. This includes educational activities by watershed groups.

To fulfill the permit requirements associated with this component of the Public Education and Outreach Minimum Control Measure, complete the following tasks during each year of your permit as shown:

## **Year 1: Raise Target Audiences' Awareness of Your Stormwater Management Program**

### Distribute the "When It Rains, It Drains" pamphlet to all target audiences.

DEP has made available copies of the pamphlet entitled, "When It Rains, It Drains" In the References and Resources contained in the DEP CD-ROM provided to you, and available on the DEP website, [www.dep.state.pa.us](http://www.dep.state.pa.us) , directLINK "stormwater." This document addresses the issue of pollution related to stormwater runoff and activities that everyone can use to improve stormwater quality. It also provides an overview of a typical stormwater management program. Using the information on distribution channels in your Public Education Plan, disseminate these pamphlets to all the target audience categories in your community. Select distribution methods in which you have confidence that the target audience will notice and use the information.

Provide a link to DEP's stormwater website [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "storm water"). The Internet is a popular way to distribute information that you can use as part of your stormwater educational program. If your local government does not have its own website, look to your Public Involvement and Participation Plan to identify potential partners within the community that maintain their own websites.

## **Year 2: Continue to Raise Awareness and Begin to Educate All Target Audiences**

### Distribute Fact Sheets to developers

In all likelihood, your local County Conservation District(s) (CCD) is responsible for implementing and enforcing the Chapter 102 Erosion and Sediment Control program and the NPDES Construction Activity Permit program programs for your municipality. However, you are still responsible for educating developers in your community about their responsibilities under the state and federal stormwater regulations.

To meet this requirement, distribute the Fact Sheets prepared by DEP (see References and Resources CD-ROM) to developers who propose construction activities in your municipality. Through your Public Education Plan, you should have identified distribution opportunities related to the building permit process.

### Run a stormwater ad in your local newspaper.

Research shows that most people get their information from local newspapers. Since this is an effective way to reach your target audiences, DEP has provided sample advertisements focused on the issue of stormwater, and practices to reduce the impacts to water quality from storm water runoff. To get the message, people need repeated exposure to it over time. Therefore, it isn't enough to run the ad only once in your local newspaper. Select an ad from the series provided by DEP. Place the ad in your local newspaper so that members of the target audiences have repeated exposure to it.

### Distribute posters to schools, community organizations and institutions, and businesses.

Topics such as responsible vehicle maintenance, household hazardous waste disposal, and pet waste management are important to stormwater management. DEP has provided you with a series of posters that convey messages about these topics. Select and distribute the first in the series to schools and businesses.

### Storm drain stenciling

While not required by the Protocol, any stenciling done by outside organizations may contribute to meeting your permit requirements for this Minimum Control Measure. DEP has information about stenciling in the References and Resources CD-ROM

### Ensure links to DEP stormwater website are maintained.

The link to DEP's website may change from permit year to permit year. To ensure that the target audiences have continued access to this source of information, check any links you may have to DEP's stormwater website and update the links if necessary. If a partner in your stormwater management efforts also has a link to DEP's website, you may want to coordinate with them to ensure their links are also updated.

## **Years 3-5: Continue Outreach**

### Continue to distribute Fact Sheets to developers and assess effectiveness.

During Year 2, you began to distribute fact sheets to developers in your community. Continue to distribute these fact sheets through your building permit application process. Identify other ways to get this information to developers using your Public Education Plan.

### Run another stormwater ad from the series in your local newspaper.

During Year 2 you selected and ran an ad from the series provided by DEP. You will continue this ad campaign by selecting and running another stormwater ad in your local newspaper at least once per year. As you did during the previous year, place the ad in your local newspaper so that members of the target audiences have repeated exposure to it, each year.

Distribute another poster from the series to schools and businesses.

During Year 2 you selected a poster containing a stormwater management message and distributed it to local schools and businesses. Select a second poster from the series and distribute it to schools and businesses each year.

Do This: Ensure links to DEP stormwater website are maintained.

As you did during Year 2, check any links you may have to DEP's stormwater website and update the links if necessary. If a partner in your stormwater management efforts also has a link to DEP's website, you may want to coordinate with them to ensure their links are also updated.

**MS4 STORMWATER MANAGEMENT PROGRAM *PROTOCOL***  
***PUBLIC INVOLVEMENT AND PARTICIPATION***  
**MINIMUM CONTROL MEASURE**

**Summary of Components of This Minimum Control Measure:**

- Develop a public involvement/participation plan
- Implement the plan

**NOTE:** *This timeline is extended one year for municipalities implementing a watershed-based approach.*

<b>Permit Year</b>	<b>Public Involvement and Participation Program</b>
Year 1	Develop public involvement/participation program
Year 2	Notify and solicit public input/involvement on SW Plan development and implementation
Year 3	Notify public as needed
Year 4	Notify public as needed
Year 5	Notify public as needed

**PUBLIC INVOLVEMENT AND PARTICIPATION PLAN**

**What Does This Section Address?**

This section provides information on what steps are needed to be taken to involve the public with issues related to municipal actions to address stormwater impacts on water quality. This includes new planning initiatives, changes to ordinances and other local regulations.

**What Do I Need to Do and By When?**

Follow the schedule in this Minimum Control Measure, shown above. If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element.

Prior to adoption of any ordinance required under this *Protocol*, provide adequate public notice, opportunities for public review and input, and hold hearings to obtain public feedback as appropriate. This can be done in conjunction with normal public sessions of the municipal governing body. The notice must be published in the local newspaper of general circulation. Ensure broad reach of the public notice, including diverse economic and ethnic backgrounds in the municipality.

When working with your county officials under Act 167, typically the county provides notice and conducts a hearing pursuant to the law. Consider involving citizen groups, watershed organizations and businesses as much as possible, to obtain broad support for your stormwater efforts.

Your permit requirements lay out the “what” and “when” of this minimum measure component; what it does not do is specify the “how.” How you will distribute obtain good public participation and involvement is up to you. Use your public involvement/participation program development in Year 1 to determine the most effective means of achieving success in this Minimum Control Measure.

Any additional public participation and involvement activities not listed here may be used to show compliance with this Minimum Control Measure. This includes activities by watershed groups.

**OPTIONAL PROGRAMS**

DEP has determined that the public participation process under Act 167, when counties and municipalities jointly prepare, adopt and implement a watershed stormwater plan, satisfies the Public Participation Minimum Control Measure. However, some municipalities may wish to do more. This section provides information for supplemental public participation efforts.

Unless you are working under an Act 167 planning effort approved by DEP which specifically includes any of the following elements, Act 167 funding will not be available for these efforts in this permit term.

Public Participation is closely linked to the Public Education and Outreach. Your success in educating the community will have a profound effect on the community's willingness to participate in stormwater related activities. That is why it is important to think about who your target audiences are, how they receive information, and in what type of activities they currently participate. By the end of Year 1, you may want to have a comprehensive plan in place that will guide your efforts to recruit volunteers and obtain participation at public meetings. During the following permit years, you may update your plan to ensure information about your target audiences is accurate. To accomplish this, you may wish to complete any or all of the following tasks:

### **Develop A Public Involvement and Participation Plan**

#### Complete the public participation portion of the plan checklist

Using information collected, fill in the DEP Public Participation Checklist (References and Resources contained in the DEP CD-ROM provided to you, and available on the DEP website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater.") with information about current programs and events within your community. You will have a comprehensive listing of existing volunteer opportunities that you can use to reach volunteer-minded individuals and tap into when planning your own volunteer activities and events.

Using information in the plan, you will produce strategies for recruiting participation from your six categories of stakeholders: municipal employees, homeowners, businesses, schools, watershed associations and other volunteer groups and developers.

#### Develop a comprehensive stakeholder mailing list.

A complete mailing list of your stakeholders will help you recruit volunteers. You can compile information for your mailing list from a number of different sources, including your planning department, your water department (or other utilities) or the chamber of commerce.

The mailing list should include mailing addresses, at the very minimum. You may also consider including phone number, fax number, and email addresses. In developing your mailing list, be sure to indicate into which of the six stakeholder categories the individual or group falls. This will allow you to conduct targeted mailings, when necessary. If possible, develop and maintain your mailing list in an electronic format, using either a spreadsheet or a database, to allow you easily perform functions such as sorting and creating mailing labels.

- Tap into agencies and organizations that are likely to have mailing information for the six categories of stakeholders.
- Create your mailing list in a way that will allow you to easily sort, update, and generate mailing labels.
- Collect additional information, such as fax numbers and email addresses, if you intend to distribute information using other means besides the mail.

### **Update Stakeholder and Volunteer Information**

#### Review your plan and provide new information about volunteer opportunities and events.

As you learn of new volunteer organizations, programs and opportunities within your community, enter this information into your plan. New information will help you to establish partnerships and ensure that your volunteer program leverages resources with other programs. At the end of each year, your plan may contain information on new volunteer programs and opportunities. It should also contain updated information about the programs and opportunities that you identified during Year 1. As these programs schedule different events each year, you will want your plan to reflect this information. These are opportunities for you to collaborate, attend and promote your activities. An updated schedule of events in the community will help you plan your activities.

- Continue checking community calendar of events to ensure that the relevant information in your plan is accurate and current.
- Add information about new volunteer organizations and programs that have a similar mission and/or reach similar audiences targeted by your volunteer program.
- Don't just update the plan and let it sit; your plan should serve as a living document that helps you to plan and implement your stormwater volunteer program and other public participation activities.

### Update your mailing list.

During the course of permit Year 1, you will obtain information that will impact the accuracy of your mailing list. Most likely you will collect the names of stakeholders who are not already contained in your mailing list through various volunteer events and activities. In addition, you may discover that some of your current addresses for individuals or groups are wrong or have changed. Use information you collect from volunteer sign-up sheets, information requests, and returned mail to update your mailing list.

### **Conduct Public Meetings**

You will find checklists and meeting materials to assist you with these meetings in the References and Resources contained in the DEP CD-ROM provided to you, and available on the DEP website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater." The input that you collect during these meetings will help you to strengthen your program and gauge support from meeting attendees.

Use a general stormwater public meeting to kick-off your public education and participation efforts. Through this meeting, you will educate stakeholders about your Stormwater Management Program and solicit their feedback on how the program will work in your community. The goal is to raise their awareness about stormwater issues, what your community will do to better manage stormwater, and opportunities for them to participate.

After the initial public meeting, it is important to maintain a connection with stakeholders to maintain momentum and a sense of purpose/accomplishment. You will provide this connection through your volunteer program, along with another public meeting later in the permit term that updates stakeholders on your progress and successes provide your stakeholders with progress reports and regular updates. Here are useful tasks to conduct:

### **Your Introductory Public Meeting**

#### Determine appropriate type of public meeting format

Not all public meeting formats are alike, depending on the goal of the meeting and how you would like to structure the agenda. The resource materials provided will help you to determine which type of meeting you would like to plan and conduct. The most appropriate formats for this particular meeting are workshops and open houses.

#### Initiate meeting preparation activities.

Use the public meeting checklist provided in the References and Resources contained in the DEP CD-ROM provided to you, and available on the DEP website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater." to begin preparing for your meeting. Preparation activities will include setting a day and time for the meeting, selecting a meeting site, developing the agenda, creating and distributing the meeting announcement, and generating meeting materials. In addition to the meeting checklist, DEP also provided you with a presentation on the Stormwater Management Program in the References and Resources CD. You can modify this presentation for your community and use this during the meeting to provide stakeholders with an introduction to the program. You must ensure that announcements for this meeting reach representatives from all six of your stakeholder categories.

#### Conduct meeting and solicit stakeholder input.

To begin preparing for your meeting, use the public meeting checklist provided in the References and Resources CD-ROM. Preparation activities will include setting a day and time for the meeting, selecting a meeting site, developing the agenda, creating and distributing the meeting announcement, and generating meeting materials. Be sure that your agenda allots enough time for people to ask questions and provide you with feedback. Someone should have the responsibility for recording comments from the public and the responses that they receive. Keep in mind not all people feel comfortable speaking in public, so you may want to consider having a public comment form available for each participant. You will find an example of this type of form, along with an example evaluation form.

#### Perform meeting follow-up activities.

The steps that you take after your public meeting are just as important as those you take to plan it. Use the same planning checklist to guide your follow-up activities. Required follow-up activities include preparing a summary of the questions and answers discussed at the meeting, generating a participants' contact list (for inclusion in your mailing list) and compiling public comment forms that you may receive via mail or fax. You may also want to review the information on the meeting evaluation forms for use in planning future public meetings.

The types of information that you collect through your public meeting will help you determine who was/wasn't represented during the meeting, what the perceptions and attitudes are of those who attended and commented and how best to reach your stakeholders in the future. Making this information available to the public, either through newspapers, websites, or a mailing, will also give people a sense that you take their input seriously and that it will influence your efforts.

- Invite representatives from all six of your stakeholder categories. It is important that all stakeholder interests have the opportunity to participate.
- Your agenda should include, but not be limited to, the overview presentation on your stormwater program and time for questions from the audience.
- Have participants sign-in at the door, providing you with their name, mailing address and their stakeholder group affiliation. You might also ask them how they heard about the meeting, to help you advertise in the future. Use this information to update your stakeholder mailing list.
- You should generate a meeting summary that documents all of the questions and answers discussed during the meeting as your meeting record.

### **Plan and Conduct Public Meeting on Program Progress**

Follow the steps from Year 1 to plan, conduct, and follow-up on a public meeting that addresses your efforts related to the Stormwater Management Program.

The process to host another public meeting for your stakeholders is the same that you used during Year 1. You should use the information that you collected from your meeting evaluation forms to aid in planning your second meeting. At this stage in your permit term, you should also have a better understanding of your stakeholders through your volunteer program, as well as your public education efforts. Use this knowledge to decide on the best public meeting format, agenda, presentations, etc. The goal of this meeting is to refresh participants' on the purpose and requirements of your Stormwater Management Program and the progress that you have made to date. Information that you collect from stakeholders during this meeting may benefit you when preparing for your next permit term, which will commence in approximately one year.

- Invite representatives from all six of your stakeholder categories. It is important that all stakeholder interests have the opportunity to participate.
- Your agenda should include, but not be limited to, a review of your stormwater program and time for questions from the audience.
- Have participants sign-in at the door, providing you with their name, mailing address, and their stakeholder group affiliation. You might also ask them how they heard about the meeting, to help you advertise in the future. Use this information to update your stakeholder mailing list.
- You should generate a meeting summary that documents all of the questions and answers discussed during the meeting as your meeting record.

### **Volunteer Program**

By providing stakeholders with an opportunity to get involved in your stormwater management efforts, you will obtain the support that you need to successfully implement all aspects of your Stormwater Management Program. There are many types of volunteer programs that can help manage stormwater and improve your community's water quality.

Choose what types of volunteer program will best suit your community: a volunteer water quality monitoring program; a volunteer storm drain stenciling program; or a volunteer stream clean-up program. All the resource materials you will need to successfully implement any of the three volunteer programs are available to you.

The goal of your volunteer program is to obtain and sustain volunteer support that will aid your stormwater management efforts. To reach this goal, it is important to develop a program that reflects your stakeholders' concerns and interests.

- Will people commit to meeting at a certain time and a certain place on a regular schedule or would people rather have the option of attending a one-time event?

This could affect whether or not you want to implement a monitoring program that relies upon volunteers' commitment to going out and sampling at certain points on a regular basis. Storm drain stenciling programs and stream clean-ups allow people to commit a larger block of time during a one-day event that may happen seasonally.

- Is it important to your stakeholders to see results immediately, or are they concerned about changes over time?

Stakeholders that want immediate results for their efforts may be most interested in stream clean-up events that make a short-term impact and has measurable results. Although storm drain stenciling programs result in something that stakeholders can see immediately, they may not feel or see the positive impact of their

efforts until the community changes its behavior due to the stencil's message. In monitoring, volunteers will not see any sort of trend in water quality until the program generates a number of samples at various points in the community.

- Are your stakeholders looking for a hands-on experience that is near the water?

A volunteer monitoring program or stream clean-ups may prove more popular among stakeholders looking for an experience that allows them to get up close to local waters. Volunteer safety could be a potential issue for you to consider with programs directly involving water.

- Are there existing programs within your community that already serve a similar purpose?

If stakeholders are involved in water quality monitoring for local watershed groups that encompass your community, it is unlikely that they would sign up for another program that serves the same purpose. It is important to ensure that you don't reinvent the wheel with whatever program you choose. Strive for coordination - avoid duplication.

Once you determine which volunteer program you will implement, get the word out to your stakeholders with an expected timeframe of when you will have the program up and running.

Establish a program schedule, assign roles and responsibilities, recruit volunteers.

Develop a schedule for implementation assign roles and responsibilities for program planning and implementation, and begin to recruit volunteers.

**Volunteer Monitoring Program**

Determine which type of assessment your program will undertake and develop your study design.

Use the manual entitled *Designing Your Monitoring Program: A Technical Handbook for Community-Based Monitoring in Pennsylvania* as the basis for planning and implementing your monitoring program. This document is a DEP publication and is made available on the CD-ROM. During this permit year, you will focus on designing the program. This involves determining the type of assessment you would like volunteers to conduct and creating the study design. The technical handbook referenced above will walk you through this process. You will want to pay particular attention to Chapters 2 and 5, as well as Appendix 6. These portions of the manual address the study design process and the different types of assessments that you can conduct with your volunteer monitors. Appendix 6 provides worksheets to help you with developing your study design.

**Storm Drain Stenciling Program**

Do This: Establish procedures for storm drain stenciling.

Read the resource materials in the References and Resources CD-ROM on developing and implementing a storm drain stenciling program.

Advertise volunteer program event/activities to all stakeholders.

The overall goal of your volunteer program is to develop a sustainable volunteer base that expands during each permit year. To reach this goal, you will have to effectively advertise your program and recruit volunteers. This can happen a number of different ways, including newsletter and newspaper articles, websites, mailings, presentations and word-of-mouth. It is important to use communication channels that will reach the various stakeholders within your community. Be sure to make announcements about your volunteer program well in advance of actual events and activities to allow people to plan. You can always send out a "Save the Date" message about an activity and follow-up with more detailed information as the date of the event/activity gets closer.

**Volunteer Monitoring Program**

Begin monitoring activities according to your program implementation schedule.

Using the program schedule developed during Year 2, kick-off your monitoring program using volunteer support. Ensure that all staff and volunteers follow the study design for the program, and that data are properly recorded and submitted. Be sure to obtain feedback from your volunteers on the monitoring program that you can use to improve the program in following years. Since your goal is to establish a volunteer base that is sustainable, you will need to understand what your volunteers liked and didn't like about their experience.

***Storm Drain Stenciling Program***

Using procedures established for your program, stencil storm drains in Priority Areas

Recruit more volunteers, and maintain current volunteer base, for your program using information about program implementation during Year 3.

The information you collect from your volunteers during the first year of program implementation can help you sustain and recruit new volunteers. Factors such as time commitment, driving distances, time of day, advertising, availability of children's activities, organization and follow-up could influence your volunteers' decision to continue their participation in your program. Understanding how your volunteers perceived their experience with the program will allow you to make necessary changes and improve program implementation. During this permit year, analyze volunteer feedback from the previous year and adjust your program accordingly. The goal is to maintain the volunteer base that you established during Year 3 and build upon that base with new recruits during Year 4.

***Volunteer Monitoring Program***

Continue monitoring activities according to your program implementation schedule.

During Year 3, you conducted your initial monitoring activities with volunteers. Review your study design and update it, if necessary, based on your experiences from the first year of program implementation. Following your program schedule that you created in Year 2, continue your monitoring activities. Keep in mind that you may have to allow time for training your new volunteers.

***Storm Drain Stenciling Program***

Using procedures established for your program, stencil storm drains in additional Priority Areas

## MS4 STORMWATER MANAGEMENT PROGRAM *PROTOCOL*

# **ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDD&E)**

### MINIMUM CONTROL MEASURE

**Summary of Components of This Minimum Measure:**

- Develop map of municipal separate storm sewer system outfalls and receiving surface waterbodies
- Prohibit illicit discharges via DEP-approved ordinance
- Implement a IDD&E Program that includes 1) field screening program and procedures and 2) elimination of illicit discharges
- Conduct public awareness and reporting program (see also the Public Education and Outreach portion of this manual)

**NOTE:** This timeline is extended one year for municipalities implementing a watershed-based approach.

PERMIT YEAR	SUMMARY OF MINIMUM MEASURE			
	PERMIT REQUIREMENTS AND MEASURABLE GOALS			
	Mapping	Ordinance	Program	Education
Year 1	<ul style="list-style-type: none"> <li>• Complete map of all outfalls</li> </ul>	Adopt and enact  NOTE: participating in Act 167 planning or implementation may follow a different schedule approved by DEP		<ul style="list-style-type: none"> <li>• Presentation on IDD&amp;E Program and Ordinance during a public meeting</li> <li>• Distribute educational material (see Public Education and Outreach Minimum Measure)</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Establish priority areas for 25% of system</li> </ul>	Implement and enforce	<ul style="list-style-type: none"> <li>• Screen Priority Areas</li> <li>• Take corrective actions to remove illicit discharges (as needed)</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute educational material (see Public Education and Outreach Minimum Measure)</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Establish priority areas for 25% of system</li> </ul>	Implement and enforce	<ul style="list-style-type: none"> <li>• Screen Priority Areas</li> <li>• Take corrective actions to remove illicit discharges (as needed)</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute educational material (see Public Education and Outreach Minimum Measure)</li> </ul>
Year 4	<ul style="list-style-type: none"> <li>• Establish priority areas for 25% of system</li> </ul>	Implement and enforce	<ul style="list-style-type: none"> <li>• Screen Priority Areas</li> <li>• Take corrective actions to remove illicit discharges (as needed)</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute educational material (see Public Education and Outreach Minimum Measure)</li> </ul>
Year 5	<ul style="list-style-type: none"> <li>• Establish priority areas for 25% of system</li> </ul>	Implement and enforce	<ul style="list-style-type: none"> <li>• Screen Priority Areas</li> <li>• Take corrective actions to remove illicit discharges (as needed)</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute educational material (see Public Education and Outreach Minimum Measure)</li> </ul>

## STORM SEWER SYSTEM MAPPING

**What Does This Section Address?**

This section provides details on the mapping component of the Illicit Discharge Detection and Elimination (IDD&E) Minimum Control Measure.

**What is an “outfall?”**

The federal regulations define an outfall as “a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two

municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.”

A “point source” is defined as “any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft from which pollutants are or may be discharged.”

### **What Should My Map Look Like?**

Understanding the location of your separate storm sewer system outfalls is the key to effectively managing stormwater runoff and protecting water quality. Not all system maps will look alike, but they should contain the same basic information and ultimately serve as a tool for your employees responsible for implementing the IDD&E Program, as well as other components of the Stormwater Management Program.

**SCALE.** The map must be of a scale that shows street-level detail and extends beyond the service boundaries of the municipal storm sewer system. A scale between 1:10,000 and 1:25,000 may be appropriate for many small MS4s that cover a large land area. This scale is acceptable as long as street-level detail can be obtained. Otherwise you should use a map scale that best depicts specific location information for each outfall, as technicians in the field will need street-level detail in order to effectively locate and monitor outfalls.

**SYSTEM FEATURES.** The goal of the system mapping is to identify all outfalls and the name/location of the receiving water bodies, to support an effort to detect and eliminate illicit discharges.

**FORMAT.** Only you can determine what format is best for your community. Factors such as staff, money, format of available data and equipment will dictate how you generate your system map. You may wish to use a geographic information system (GIS) to electronically generate your system map. PA DEP recognizes that not all communities have GIS capabilities. For those that do not have GIS capabilities, you can generate your map using other means. The format of your map is not as important as the quality of the information it contains. For help with developing your system map, consult the list of resources provided in Appendix 1.

### **Where can I get the names of “receiving waters?”**

Use the names shown on the relevant USGS Topographical Survey Quadrangle map for your MS4. These can be obtained here:

<http://mac.usgs.gov/maplists/mlp001.cgi?initial=1&state=Pennsylvania&listtype=S&scale=1%3A24%2C000%2F1%3A25%2C000+Scale>

### **What is meant by “priority areas?”**

This simply means selecting portions of your system by the 1) likelihood of problems and 2) the significance of the problems. For instance, the highest priorities should be the areas within your community that are high-risk for dumping to storm sewer system inlets and illegal connections to the system, such as sections of the system with older sanitary sewer lines or industrial activity and those areas with known incidences of illicit discharges, connections or illegal dumping in the past. The information that you collected when creating the outfall map should prove useful when prioritizing high-risk areas

### **What Do I Need to Do and By When?**

Pursuant to the schedule at the beginning of this section of the *Protocol*, you must have a comprehensive map of your municipal separate storm sewer system (MS4) outfalls and receiving waters that will allow you to effectively implement the illicit discharge detection and elimination program described in the next section of this document. You must also have a list of priority areas in the system for efforts to trace the sources and eliminate illicit and illegal discharges and a procedure for program evaluation and assessment. If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element.

#### Sources of Information

You can accomplish this activity by reviewing city records, drainage maps and existing storm drain maps. You may need to conduct field surveys to verify outfall locations. Field surveys will also give you the opportunity to locate any additional outfalls that were previously unknown.

#### Developing the Map

Devise an internal coding system for your outfalls that you can use on your system map. This will allow you to reference the location of outfalls easily, rather than using cumbersome and subjective narrative descriptions, when conducting your field screening activities under the IDD&E Program, described later in this section.

Show the location of all outfalls and the names and locations of all surface waters that receive discharges from those outfalls. Include all outfalls that are physically connected to the system, even those that are outside of the Urbanized Area boundary.

#### High-Risk Problem Areas

Identify areas within your community that are high-risk for dumping to storm sewer system inlets and illegal connections to the system, such as sections of the system with older sanitary sewer lines or industrial activity and those areas with known incidences of illicit discharges, connections or illegal dumping in the past. The information that you collected when creating the outfall map should prove useful when prioritizing high-risk areas.

In addition, you should conduct visual outfall screening during dry weather. Where dry weather flows are observed, conduct field tests of selected pollutants to establish priority areas (this is described later in this *Protocol*). Use the results when evaluating the high-risk areas.

Prioritize these high-risk areas that are likely to have illicit discharges, illegal connections to the system, and illegal dumping. Beginning in Year 2, each year identify the highest priority areas for 25 percent of the system until the entire system is prioritized by the end of the permit term. This list will be the Priority List for Illicit Discharge Elimination described in a following section of this component of the *Protocol*.

## **IDD&E MINIMUM MEASURE COMPONENT: ILLICIT DISCHARGE ORDINANCE**

### **What Does This Section Address?**

This section provides information on the ordinance developed by DEP that will provide the legal authority you need to implement and enforce your Illicit Discharge Detection and Elimination (IDD&E) Program under this Minimum Control Measure. A Model Ordinance is available from DEP.

### **Can I make changes to the ordinance?**

DEP discourages changes to the model ordinance, because it has been prepared to meet the MS4 permit requirements. However, some municipalities already have good stormwater ordinances. Municipalities who do not wish to enact the model ordinance in its entirety must get approval from DEP to ensure that the MS4 permit requirements are met.

DEP sought public comments on the model ordinance and made adjustments in the final version based on the comments.

### **What Do I Need to Do and By When?**

The timing depends on the municipality's involvement in any Act 167 planning and the status of that planning and/or implementation:

The model ordinance must be enacted in the first year of the permit term, except where a municipality commits to a multi-municipal, watershed-based program following this *Protocol*, in which case the schedule is delayed one year. Subsequent to completion of the Act 167 Plan (or Plan Update), the ordinance must be modified to reflect Plan requirements. Regardless of the timing of the Act 167 Plan (or Plan Update) an ordinance must be enacted within the first two years of the permit term, for MS4s participating in the Act 167 process.

## **ILLICIT DISCHARGE DETECTION AND ELIMINATION**

### **What Does This Section Address?**

This section provides information on the IDD&E Program that establishes procedures for identifying and eliminating prohibited discharges of non-stormwater to your storm sewer system.

### **What Do I Need to Do and By When?**

The IDD&E Program consists of the following three elements, which must be implemented according to the schedule (if you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element):

- Conduct Field Screening
- Identify Source of Illicit Discharges
- Strategy to Remove or Correct Illicit Discharges.

1. FIELD SCREENING

Field screening is necessary to identify the source(s) of the actual illicit discharges. The Priority List that you create each year will serve as the basis for your field screening activities. You must start your annual field screening in Year 2 of your permit. If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year.

The Checklist provided in this *Protocol* (see the References and Resources CD-ROM and Appendix 1) must be used when conducting field screening. Every outfall in the Priority Areas must be screened two times a year as each priority area is screened. This activity is something that you can piggy-back onto other existing field activities, such as regularly scheduled fire hydrant inspections, road repairs, landscaping activities, other field work conducted during county preparation of the Act 167 stormwater plan, etc.

Using the Checklist, the staff designated to conduct field screening will go out into the Priority Areas and collect visual data. The screening should be conducted at least 72 hours since the last precipitation event, and that at least 48 hours should pass between the first screening at a particular outfall and the second screening at that outfall. If someone conducting the field screening discovers a dry-weather flow, they (or another designated individual with the proper training) must collect a sample of that flow for analysis. Such a discovery triggers the requirements under the other two program elements:

- Identify Source of Illicit Discharges
- Remove or Correct Illicit Discharges

2. IDENTIFY SOURCE OF THE ILLICIT DISCHARGE

The following IDD&E Program elements only apply if you identify a dry-weather flow during your field screening activities in Years 2, 3, 4, and/or 5. You will need to conduct all the activities described below for each illicit discharge that you identify during field screening.

- **Collect and analyze samples of the dry-weather flow.**

If you identify a dry-weather flow at an outfall during field screening, take two grab samples of the flow. Analyze the samples for the characteristics and pollutants listed in the Table below.

**Dry-Weather Flow Sampling Analysis Requirements**

Characteristic/Pollutant	Method
Color	Visual observation
Odor	Visual observation
Turbidity	Visual observation
Sheen/scum	Visual observation
pH	In-field analysis
Total chlorine	In-field analysis
Total copper	In-field analysis
Total phenol	In-field analysis
Detergents/surfactants	In-field analysis
Flow	In-field measurement
Bacteria	Laboratory analysis

As shown in the Table, some parameters only require visual observations while others require more analytical testing. You can use inexpensive colorimetric field test kits to analyze your grab samples for total chlorine, total copper, total phenol, and detergents. You will need this information to effectively determine the type of pollutants and pinpoint the source of the discharge. The field screening checklist, along with the sampling resource materials, referred to in this section will provide you with helpful information on techniques for taking grab samples and the methods to use for analyzing your samples.

- **Identify the source of the discharge.**

The data you obtain from visual, in-field, and laboratory analysis will provide you with the information necessary to determine the source of the dry-weather flow or floatables. Based on the pollutants contained in your grab sample, you should have an idea if the source is from illegal dumping in a storm drain, a cross-connection, or a leak in a pipe. Using this information, you will be able to narrow down the potential sources of the dry-weather flow and begin storm drain investigations by tracing the flow

upstream using your storm drain maps and by inspecting upgradient manholes and storm drains. If need be, you can also conduct more focused tests to pinpoint the source.

You may decide to conduct smoke and dye testing; however, these additional costs may not be allowable under the Act 167 reimbursement program.

### 3. REMOVE OR CORRECT THE ILLICIT DISCHARGE

- **Determine if the flow is from illegal dumping or an improper connection.**

Once you identify the source, you need to determine if it is a case of improper dumping or if a property owner has an improper physical connection to your storm sewer system. This will help you select the most appropriate method for correcting or removing the discharge. If it is a case of improper dumping, your only recourse may be to conduct intensified education of residents living in and traveling through that area. If it is a case of an improper physical connection, see the next paragraph.

- **Take the appropriate action to correct the discharge.**

If a violation is found, notify the property owner of the violation. Give the property owner a timeframe for removal of the source. After that time has passed, screen the outfall at which you identified the dry weather discharge. In addition, visit the property again to confirm that the property owner removed or corrected the source. If the property owner has not resolved the problem in the allotted timeframe, you may need to take further action.

- **Document all steps taken**

The results of all discussions, tests, and screenings, should be documented for follow-up purposes. Progress evaluation of your IDD&E program will depend on the ability to tabulate the number of illicit connections corrected and the status of those in the process of being corrected.

- **List the status of all illicit discharges detected in your Annual Report Form to DEP**

## ILLICIT DISCHARGE DETECTION AND ELIMINATION PUBLIC EDUCATION AND OUTREACH

### **What Does This Section Address?**

This section provides a brief overview of the public education and outreach activities linked to the overall IDD&E Minimum Control Measure. Many of these activities link to activities discussed under the Public Education and Outreach Minimum Control Measure and the Public Involvement and Participation Minimum Control Measure, both addressed elsewhere in this Protocol. Completing the activities described under those Minimum Control Measures will help you to meet your public education and outreach requirements under this Minimum Control Measure.

You will need to conduct more public education and outreach activities, however, when you are trying to correct an illicit discharge. This section addresses those additional public education and outreach activities, as well as the schedule for completing public education and outreach activities to meet your permit requirements under this Minimum Control Measure.

### **What Do I Need to Do and By When?**

You can find all the resource materials needed to conduct these public education and outreach activities with the other educational resources (References and Resources CD) . To fulfill the permit requirements associated with this component of the IDD&E Minimum Control Measure, complete the following tasks during each year of your permit (If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element):

#### **Year 1: Raise Awareness About Illicit Discharges and the IDD&E Program**

- *Present details on the components of the IDD&E Program and Ordinance during a public meeting (see Ordinance requirements in previous section).*

As stated in the previous section, you must share with your community the details of the IDD&E Program and ordinance through a public meeting. This can be a regularly-scheduled public meeting of the municipal officials.

- *Distribute educational materials on the impacts of illicit discharges through the storm sewer system to water quality (see Public Education and Outreach minimum measure requirements).*

Again, there is nothing additional for you to do under this minimum measure, as long as you meet your permit requirements for Public Education and Outreach.

**Years 2 - 5: Educate the Public About Illicit Discharges**

- *Continue to distribute educational materials on the impacts of illicit discharges through the storm sewer system to water quality.*

Follow your permit requirements for Year 2 of the Public Education and Outreach minimum measure and you will be in compliance with your permit requirements under this minimum measure.

## MS4 STORMWATER MANAGEMENT PROGRAM *PROTOCOL*

# **CONSTRUCTION STORMWATER RUNOFF MANAGEMENT**

### MINIMUM CONTROL MEASURE

**Summary of Components of This Minimum Control Measure:**

- Enact, implement and enforce a stormwater control ordinance using DEP model language,
- Require review and approval of Erosion and Sediment Control Plans: (1) for any earth disturbance one acre or more causing runoff to the MS4 (or any earth disturbance five acres or more regardless of the planned runoff), and (2) as a prerequisite for the formal approval of land development and redevelopment plans or the issuance of building permits, and
- Distribute educational materials to land developers with the applications for building permits and other land development/redevelopment permits or approvals (see Public Education and Outreach Minimum Control Measure).

**NOTE:** *Municipalities that already have similar ordinances only need to amend them to include any of these requirements not already in place (DEP will need to approve alterations from the Model Ordinance)*

**NOTE:** *This timeline is extended one year for municipalities implementing a watershed-based approach*

PERMIT YEAR	SUMMARY OF MINIMUM CONTROL MEASURE PERMIT REQUIREMENTS AND MEASURABLE GOALS	
	Construction Site Stormwater Program	Developer Education
Year 1	<ul style="list-style-type: none"> <li>• <u>Ordinance:</u> enact an ordinance requiring:                             <ul style="list-style-type: none"> <li>• the review and approval of Erosion and Sediment ("E&amp;S") Control Plans,</li> <li>• for any earth disturbance one acre or more with runoff to the MS4, or five acres or more regardless of the planned runoff, and</li> <li>• as a prerequisite for the formal approval of land development plans or the issuance of building permits</li> </ul> </li> <li>• <u>Process:</u> <ul style="list-style-type: none"> <li>• Use municipal resources, a service provider or the local CCD to review E&amp;S Plans,</li> <li>• Using the local CCD, establish an agreement with the local CCD for the review</li> </ul> </li> <li>• <u>Standard:</u> Require that the Erosion and Sediment Control Plans be developed in accordance with the requirements of Chapters 102 (erosion &amp; sedimentation) of the DEP regulations</li> </ul>	Meet permit requirements and measurable goals for Year 1 under Public Education and Outreach minimum control measure.
Year 2	Implement the ordinance (and any agreement) for review of Erosion and Sediment Control Plans	Meet permit requirements and measurable goals for Year 2 under Public Education and Outreach minimum control measure.

PERMIT YEAR	SUMMARY OF MINIMUM CONTROL MEASURE PERMIT REQUIREMENTS AND MEASURABLE GOALS	
	Construction Site Stormwater Program	Developer Education
Year 3	Implement the ordinance (and any agreement) for review of Erosion and Sediment Control Plans	Meet permit requirements and measurable goals for Year 3 under Public Education and Outreach minimum control measure.
Year 4	Implement the ordinance (and any agreement) for review of Erosion and Sediment Control Plans	Meet permit requirements and measurable goals for Year 4 under Public Education and Outreach minimum control measure.
Year 5	Implement the ordinance (and any agreement) for review of Erosion and Sediment Control Plans	Meet permit requirements and measurable goals for Year 5 under Public Education and Outreach minimum control measure.

**CONSTRUCTION SITE STORMWATER PROGRAM**

**What Does This Section Address?**

This section addresses the requirements for developing and implementing a program to control stormwater runoff from construction sites during earth disturbance activities consisting of one acre or more where there will be runoff to the MS4 (or five acres or more regardless of the planned runoff).

In Pennsylvania, two programs currently exist that address stormwater runoff from construction activities: 1) the Erosion and Sediment Control Program under 25 Pa. Code Chapter 102, and 2) the NPDES Stormwater Construction Permit Program.

The Erosion and Sediment Control Program (also called the “Chapter 102 program”), is described in the regulations at 25 Pa. Code §§102.1 – 102.51. The program requires an Erosion and Sediment Control Plan for any earth disturbance equal to or greater than 5000 square feet. For more information, visit the DEP stormwater website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK “stormwater”, or view the regulations here: [www.pacode.com/secure/data/025/chapter102/chap102toc.html](http://www.pacode.com/secure/data/025/chapter102/chap102toc.html).

The Erosion and Sediment Control Plan must contain BMPs appropriate to the site and the surrounding area that might be impacted by the construction activities, as well as for post-construction runoff. The construction activity-related BMPs are available to developers and others through the Erosion and Sediment Pollution Control Program Manual, (DEP ID: 363-2134-008) on DEP’s website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK “stormwater,” and available at your local CCD.

Generally speaking, an NPDES Stormwater Construction Permit is required for earth disturbance activities (hereinafter referred to as “construction”) where (1) the construction disturbs five acres or more, or (2) there is a discharge from a site to the MS4 where earth disturbance is one acre or more.

In most cases, your County Conservation District implements these two programs within your community. DEP is responsible for implementing and enforcing these programs in cases where the County does not have this responsibility.

By requiring review and approval of Erosion and Sediment Control Plans (and proof of NPDES Stormwater Construction Permits where required), and by coordinating your building permit and other land development permits or approvals with the CCD (or DEP in some cases), you will meet your MS4 permit requirements for this component of the Construction Stormwater Runoff Management Minimum Control Measure. Utilizing these existing statewide programs, the municipality avoids the need to do a duplicative, independent review of every Erosion and Sediment Control plan.

### **What Do I Need to Do and By When?**

Pursuant to the schedule at the beginning of this section of the *Protocol*, you must (1) enact an ordinance (or revise your existing one) (2) arrange for review of Erosion and Sediment Control plans, and (3) require proof of issuance of NPDES permits where they are required. After that, you must implement the ordinance and the E&S plan review process. If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element.

Ordinance: The ordinance must contain two basic requirements regarding any earth disturbance greater than or equal to one acre that results in runoff to your MS4 (or five acres or more regardless of the planned runoff): (1) review and approval of the Erosion and Sediment Control Plan by the municipality, or the CCD or DEP (e.g., as part of issuance of NPDES Stormwater Construction Permits), and (2) the review and approval (and permit) must also be a prerequisite for any building permits and other land development permits or approvals.

A model ordinance is available from DEP.

Arrangement With County Conservation District: If you use the local CCD for your reviews and approvals, you must have an agreement with your local CCD that addresses these reviews and permitting requirements. This agreement ensures the close coordination between the municipality and the CCD on these important issues affecting water quality.

Satisfaction of these review and approval requirements can be met by a letter from the local CCD (in the county where the project is located) indicating that (1) the CCD has reviewed and approved the applicant's Erosion and Sediment Control Plan developed in accordance with the regulatory requirements and, where required, (2) an NPDES Stormwater Construction Permit has been issued.

In some counties, the CCD may not wish to participate in this approach. In those cases, the municipality will have to make arrangements with DEP. Nothing in PAG-13 or this Protocol changes the requirements in Chapter 102 or the NPDES Stormwater Construction Permit programs.

## **DEVELOPER EDUCATION**

### **What Does This Section Address?**

This section addresses the educational component of the Construction Stormwater Runoff Management Minimum Control Measure. Developers have responsibilities under the existing programs administered by the County Conservation Districts (CCDs) (or DEP). Their projects can be delayed if they are unfamiliar with the Chapter 102 Erosion and Sediment Control Plan requirements, and the interrelationship with municipal building permit and land development approvals.

Therefore, ensuring that developers understand these stormwater management requirements at their sites will ultimately benefit you. Through this Minimum Control Measure component, you will distribute educational materials created by DEP to the developers planning to build in your community. You must perform these activities to be in compliance with your permit requirements.

### **What Do I Need to Do and By When?**

To fulfill the permit requirements associated with this component of the Construction Stormwater Runoff Management Minimum Control Measure, distribute educational materials to developers on the impacts of stormwater runoff and construction site stormwater management requirements (see Public Education and Outreach Minimum Control Measure requirements).

There is nothing additional for you to do under this Minimum Control Measure, as long as you meet your permit requirements for Public Education and Outreach. At this point in your stormwater program, developers working in your community may not be familiar with your stormwater management program under your MS4 permit.

The educational materials introduce the concept of a separate storm sewer system and address the impacts of stormwater runoff from construction sites to the system. By raising developers' awareness about your stormwater program, you are contributing to facilitating the CCD's efforts in securing compliance from developers and are more likely to obtain participation in implementing your program during the remainder of the permit term.

## MS4 STORMWATER MANAGEMENT PROGRAM *PROTOCOL*

# **POST-CONSTRUCTION STORMWATER RUNOFF MANAGEMENT**

### MINIMUM CONTROL MEASURE

**Summary of Components of This Minimum Control Measure:**

- Enact, implement and enforce a stormwater control ordinance using DEP model language,
- Coordinate the review and approval of post-construction BMPs simultaneously with the review and approval for construction Erosion and Sediment Control Plans as described in the Construction Minimum Control Measure, and
- Ensure long-term operation and maintenance of the BMPs

**NOTE:** *This timeline is extended one year for municipalities implementing a watershed-based approach*

PERMIT YEAR	SUMMARY OF MINIMUM CONTROL MEASURE PERMIT REQUIREMENTS AND MEASURABLE GOALS	
	Stormwater Management Program	Long Term Operation and Maintenance
Year 1	<ul style="list-style-type: none"> <li>• <u>Ordinance:</u> Enact an ordinance requiring:                             <ul style="list-style-type: none"> <li>▪ No formal approval of land development plans or issuance of building permits without municipal approval of post-construction stormwater controls,</li> <li>▪ For development and redevelopment activities with earth disturbance of one acre or more with runoff to the MS4, or five acres or more regardless of the planned runoff, be conducted in accordance with the ordinance</li> </ul> </li> <li>• <u>Process:</u> Rely on DEP review of permits <i>where applicable (e.g., individual permit issued)</i>; where no DEP review of post-construction controls is conducted, use municipal resources, or establish an agreement with the local CCD or other service provider (e.g., municipal engineer), for coordination of post-construction BMP approvals</li> <li>• <u>Standard:</u> Require post-construction structural and non-structural BMPs be designed, constructed and maintained to meet (1) the requirements of the approved Act 167 plan and the municipal ordinance, or until such Act 167 Plan is in place, (2) the DEP statewide water quality requirements (e.g., 25 Pa Code Chapter 93).</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that stormwater BMPs are built, operated and maintained as designed</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Implement the ordinance and post-construction BMP approval process</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that stormwater BMPs are built, operated and maintained as designed</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Implement the ordinance and post-construction BMP approval process</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that stormwater BMPs are built, operated and maintained as designed</li> </ul>

PERMIT YEAR	SUMMARY OF MINIMUM CONTROL MEASURE PERMIT REQUIREMENTS AND MEASURABLE GOALS	
	Stormwater Management Program	Long Term Operation and Maintenance
Year 4	<ul style="list-style-type: none"> <li>Implement the ordinance and post-construction BMP approval process</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that stormwater BMPs are built, operated and maintained as designed</li> </ul>
Year 5	<ul style="list-style-type: none"> <li>Implement the ordinance and post-construction BMP approval process</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that stormwater BMPs are built, operated and maintained as designed</li> </ul>

**POST-CONSTRUCTION STORMWATER RUNOFF MANAGEMENT**

**What Does This Section Address?**

This section applies to management of stormwater runoff after construction is complete. The consideration of the permanent changes to the natural characteristics of a developed area is a key component of addressing the stormwater impacts on water quality. Studies show that as the natural characteristics of a watershed become changed through development and redevelopment, there is an accompanying increase in surface runoff rates and volumes, and a loss of natural infiltration into the groundwater regime. This impacts surface water quality in several ways, including increased loadings of pollutants such as oil and grease, pesticides, sediment and litter, as well as increased temperature of receiving waters. These loadings and impacts can impair existing or designated uses of the water-body, such as aquatic life, water supply and recreation.

Runoff in developed areas also increases stream-bank erosion and habitat destruction. In addition, the loss of infiltration affects the “base flows” of streams which are necessary to support aquatic life and which are particularly vulnerable in times of drought. Finally, excessive stormwater runoff in urbanized areas can create flash flooding problems.

**What do I need to do and by when?**

First, it is important to remember that management of post-construction run-off goes hand-in-hand with the Construction Minimum Control Measure component. Approvals for construction activities will be dependent on post-construction issues addressed in this section of the *Protocol*. For instance, if an applicant’s plan for a land development or redevelopment project adequately addresses stormwater issues *during construction* but does not do so for *post-construction* impacts, then it must not be approved until the post-construction issues are addressed.

You need to implement a post-construction program consisting of (1) an ordinance, (2) a process for review of post-construction plans and (3) use of the correct standard to protect and maintain water quality. This program must be fully implemented within the first permit term, following the schedule at the beginning of this section of the *Protocol*. If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element.

1. Enact, implement and enforce a stormwater control ordinance using DEP model language.

The ordinance will address the other requirements described in this Section of the *Protocol*, such as the proper standard for BMPs and operations and maintenance requirements for the BMPs.

The ordinance will apply a statewide post-construction requirement until the water quality-based Act 167 Plan is adopted by the County and implemented by the municipality, at which time the municipality will need to amend it to include those requirements. DEP may approve a different schedule as appropriate (e.g., where the plan is or will soon be under development).

The ordinance will require that all development and redevelopment activities with earth disturbance one acre or more with runoff to the MS4 (or five acres or more regardless of the planned runoff), be conducted in accordance with the ordinance, and in particular that no formal approval of land development plans or issuance of building permits without municipal approval of post-construction stormwater controls.

A Model Ordinance is available from DEP.

2. Commit municipal resources or establish an agreement with the local CCD or other service provider (e.g., municipality's consulting engineer) for coordination of post-construction BMP approvals

You must have a process to review the post-construction controls in conjunction with the review process for construction approval as described in the Construction Minimum Control Measure. In many cases, you can rely on the DEP permit issued in Special Protection watersheds. Where DEP issues authorizations under its "general permit" (PAG-2), you must conduct the review.

3. Ensure that the post-construction controls will meet state water quality requirements.

The requirements for post-construction controls depend upon the status of Act 167 Stormwater Management planning in your watershed. Where a water-quality-based Act 167 plan has been completed (or updated), those local watershed requirements apply. Otherwise, statewide requirements must be implemented. Here are more details:

#### **a. Watershed-Specific Requirements**

The Pennsylvania Storm Water Management Act (also known as "Act 167") requires county and multi-municipal planning and implementation of post-construction controls to protect water quality, on a watershed basis. (See the description of this program in the Introduction to this *Protocol*, or visit the DEP stormwater website: [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK "stormwater". These post-construction control requirements are developed after careful evaluation of the characteristics of the watershed. This *Protocol* uses the Act 167 program as a centerpiece of the MS4 requirements.

If your county has adopted and DEP has approved an Act 167 Plan, there will be post-construction requirements in that Plan which must be implemented by the municipality. These requirements will set the standard for post-construction BMPs that must be used in your municipality.

Most *existing* Act 167 Plans will need to be modified to address water quality (and other MS4 permitting issues to meet MS4 requirements such as Illicit Discharge Detection and Elimination). The water quality issues include both pollutant loading and the quantity of water discharged and infiltrated. This *Protocol* requires that municipalities implementing existing Act 167 plans be updated according to the DEP update process, and appropriate changes made to the municipal ordinance.

Who ensures that the BMP's meet the water quality requirements? It is the municipalities' responsibility. However, DEP will be reviewing post-construction plans for Individual permits, and some County Conservation Districts have the expertise to conduct the reviews under an agreement with the municipality similar to that for the Construction Minimum Control Measure.

#### **b. Statewide requirements**

State regulations require, under 25 Pa. Code Section 93.4, the protection and maintenance of existing uses and the level of water quality necessary to protect those uses in all surface waters, and the protection and maintenance of water quality in "special protection" watersheds. Special protection waters are Pennsylvania's highest quality surface waters and include Exceptional Value (EV) and High Quality (HQ) waters.

DEP published a Comprehensive Stormwater Policy in September, 2002, which recommended that in order to meet the regulatory requirements of 25 Pa. Code Section 93.4a, persons involved in the development of post construction stormwater management plans should prepare a comparative pre and post construction stormwater management analysis, and

In watersheds other than special protection, based upon the comparative stormwater management analysis, planners and applicants should evaluate and utilize infiltration BMPs to manage the net change in stormwater generated or otherwise replicate to the maximum extent possible preconstruction stormwater infiltration and runoff conditions so that post construction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters. Additionally, water quality treatment BMPs must be employed where necessary to ensure protection of existing uses and the level of water quality necessary to protect those existing uses. Finally, the volume and rate of stormwater discharges must be managed to prevent the physical degradation of receiving waters, such as scour and streambank destabilization;

In special protection watersheds, based upon the comparative stormwater management analysis, planners and applicants can ensure that existing water quality will be protected and maintained by demonstrating that post construction infiltration equals or exceeds preconstruction infiltration and that any post construction discharge will not degrade the physical, chemical or biological characteristics of the special protection surface water. In these special protection watersheds, infiltration BMPs should be used to the maximum extent possible. To the extent that planners and applicants cannot totally infiltrate stormwater to pre construction volumes due to site conditions or limitations, off-site compensation projects in the same watershed and preferably upstream of the project site should be evaluated and employed to protect and maintain water quality. Additionally, water quality treatment BMPs must be employed where necessary to ensure the protection and maintenance of water quality. Finally, the volume and rate of stormwater discharges must be managed to prevent the physical degradation of receiving waters, such as scour and streambank destabilization. [NOTE: PAG-13 is not available for use for MS4s with a discharge to a Special Protection water; see the *Fact Sheef*]

This recommended approach from the DEP policy must be applied by MS4s adopting this *Protocol*.

This aspect of the Post-Construction Minimum Control Measure ensures that building and land development activities in your municipality comply with state law permitting requirements, at the local level.

## OPERATION AND MAINTENANCE OF POST-CONSTRUCTION BMPs

### What Does This Section Address?

This section addresses your responsibility to ensure that the post-construction BMPs required and approved pursuant to your program, are constructed, operated and maintained.

First, your program must monitor the implementation of the approved BMPs. This can be easily done as part of the regular construction-inspection process.

Many BMPs may be “non-structural”; they will require no operation or maintenance. Examples are: use of open space and vegetated buffers in development design, minimization of soil disturbance and compaction during construction and minimization of directly-connected impervious areas. Other BMPs - “structural BMPs” - will require proper operation and maintenance. For example, wet ponds, grassed swales, infiltration basins and bioretention areas.

### What Do I Need to Do and By When?

You need to have a monitoring program that ensures that the post-construction BMPs are constructed, operated and maintained, within the first permit term. If you are following a watershed-based approach under Act 167 (or otherwise as approved by DEP), your schedule of compliance can be delayed one year for each element.

Your program must have two elements:

- Implementation: ensure installation of the BMPs as designed. Coordinate your monitoring with the CCD, especially where a permit has been issued.
- Operation and Maintenance: some of the structural BMPs will require maintenance over time to be effective. You must have a system to monitor these BMPs. If any BMPs are not operated or maintained and are ineffective, develop a plan to address them. The DEP Model Ordinance provide legal tools to accomplish this.

**MS4 STORMWATER MANAGEMENT PROGRAM PROTOCOL**  
**POLLUTION PREVENTION AND GOOD HOUSEKEEPING**  
**FOR MUNICIPAL OPERATIONS AND MAINTENANCE**

**MINIMUM CONTROL MEASURE**

**Summary of Components of This Minimum Control Measure:**

- Comprehensive Pollution Prevention Program for municipal operations, focusing particularly on vehicle maintenance, fueling and washing, maintenance of stormwater facilities and employee training.
- O&M Program training program for municipal employees.

<i>SUMMARY OF MINIMUM CONTROL MEASURE PERMIT REQUIREMENTS AND MEASURABLE GOALS</i>			
<i>PERMIT YEAR</i>	<b>O&amp;M Program</b>		<b>Training</b>
	<b>Storm Water Facility Operation, Maintenance and Inspection</b>	<b>Vehicle Maintenance, Fueling, and Washing</b>	
Year 1	Gather information on existing facilities and programs	Gather information on existing operations and programs	No requirement
Year 2	Develop an operation, maintenance and inspection program for stormwater facilities	Develop pollution prevention-based O&M Program for vehicle maintenance, fueling and washing	Conduct basic awareness training for municipal employees
Year 3	Implement O&M Program for stormwater facilities	Implement O&M program for vehicle maintenance, fueling and washing	Train Municipal employees on new procedures developed for stormwater facility operation, maintenance and inspection and vehicle maintenance, fueling and washing
Year 4	Implement O&M Program for stormwater facilities	Implement O&M program for vehicle maintenance, fueling and washing	Train new employees
Year 5	Implement O&M Program for stormwater facilities	Implement O&M program for vehicle maintenance, fueling and washing	Update training on procedures Continue training

**POLLUTION PREVENTION PROGRAM FOR MUNICIPAL OPERATIONS**

**What Does This Section Address?**

This section will help you make sure that you have a pollution prevention/good housekeeping program (“P2 Program”) for municipal operations to minimize stormwater impacts from your MS4. The focus will be on (1) inspection, operation, maintenance and repair of municipally-owned stormwater facilities in the municipality such as detention and retention basins and other Best Management Practices, and (2) pollution prevention related to municipal vehicle operations. You will also need to do some training of municipal employees for these new procedures, addressed in the next section.

### **Do I need to address ALL municipal operations in my P2 Program?**

No. During this permit term the scope of the P2 Program should primarily focus on maintenance of the storm sewer system and other stormwater management facilities, vehicle operations and employee training.

There are several best management practices to address stormwater impacts from your MS4, and you may want to address these as well. However, they are not required under this *Protocol*. These include: landscaping (including pesticide, herbicide, and fertilizer use), deicing, oil recycling, tire collection, and household hazardous waste collection. If you have these types of programs in place, they will strengthen the O&M program that your stormwater permit requires you to develop. If you do not participate in these types of activities, you may want to consider them. During this permit term, however, your permit requires you only to address the three areas of your municipal operations listed above and described in more detail in the next section.

### **What Do I Need to Do and By When?**

Your municipality may already have some of these procedures in place, so first it will be necessary to evaluate current programs. Following the schedule above, you will spend the first year of the permit term getting familiar with the existing stormwater sewer system and programs that exist within your municipality. In the remainder of the permit term, you will develop and implement the O&M Program that focuses on Pollution Prevention ("P2") and implement training for municipal employees.

Your permit requires you to bring existing pollution prevention programs up to a certain minimum level, so it is important to see what you already have in place. In many cases, an existing program may meet the minimum requirements and, therefore, not need any improvement.

### **Year 1: Compile information on existing facilities, operations/maintenance, inspection and pollution prevention programs**

To gain an understanding of existing municipal aspects in the three focus areas, determine from various municipal departments all available information on existing:

- MS4 stormwater system features, such as catchment and detention basins (*NOTE: this may also be determined in the Illicit Discharge Detection and Elimination Minimum Control Measure implementation*),
- Municipal programs to ensure proper operations and maintenance of the MS4 stormwater system features,
- Municipal vehicle operations, in particular vehicle maintenance, fueling, and washing; pay specific attention to the following: (1) frequency of activities, (2) types of substances used, (3) materials storage, handling, and disposal practices, and (4) employee training.

### **Year 2: Develop O&M Program**

#### ***Stormwater Facilities***

*Inspect all municipally-owned stormwater facilities*

Stormwater control facilities (and other BMPs) are important components of the MS4 and its ability to prevent stormwater impacts downstream. You must establish "baseline" information on these facilities in your MS4, if you haven't done so already. Your inspections should document current conditions and identify any needed maintenance or repair. If any system features are not functioning properly, a plan to address the deficiencies must be developed.

*Develop a Stormwater Facility Operations and Maintenance Program*

Using the criteria and requirements described below for Year 3, establish an operations and maintenance program for all municipally-owned storm system facilities and other BMPs. All municipally-owned facilities will be inspected at least annually during the remainder of the permit term (years 3, 4, and 5) to ensure they are meeting design criteria and are properly maintained and functional. By the end of year 2, you must have a detailed schedule for inspecting all stormwater facilities, and for their operation and maintenance.

#### ***Municipal Vehicles***

*Develop a Vehicle Operations and Maintenance Program*

Using the criteria and requirements described below, establish an operations and maintenance program for all municipal vehicle operations.

*Obtain materials needed for implementing the O&M Program during Year 3.*

The program that you will implement during Year 3 and beyond require some up-front planning and a few materials that you may or may not currently use at your facilities. During this permit year, prepare for implementing P2 practices related to vehicle maintenance, fueling, and washing by obtaining and/or creating the following (if you don't already have them)(*these costs are typically NOT reimbursable under Act 167*):

- Dry absorbent material (e.g., kitty litter, straw, or sawdust) for cleaning up spills;
- Receptacles for disposal of oily rags, used filters, batteries, spent coolants, degreasers, etc.;
- Drip pans for fluid collection and recycling;
- Covered or pervious (e.g., gravel or grass) washing areas;
- Signs that remind employees of P2 practices.

### **Year 3: Implement O&M Program**

By the end of year three, you must put the following policies and practices into place. You will use the training program described in the next section of this Minimum Control Measure as the primary method of educating employees about these procedures.

Since many of these activities are easy-to-implement procedures, any additional costs to the municipality are not reimbursable under Act 167.

### ***Vehicle Maintenance, Fueling, and Washing***

#### Fueling:

- Place overfill prevention equipment on Underground Storage Tanks (USTs). Watch the transfer constantly to prevent overfilling and spilling (*NOTE: this is not Act 167 reimbursable*)
- Discourage "topping off" of fuel tanks through training and posting signs
- Avoid cleaning fueling areas with running water. Consider using a damp cloth on the pumps and a damp mop on the pavement rather than a hose
- Control spills immediately. Small spills can be cleaned up with rags and larger spills can be cleaned with dry absorbent material such as kitty litter, straw or sawdust. **Do not wash petroleum spills into the storm drain**

#### Maintenance:

- Make proper disposal of greasy rags, oil filters, air filters, batteries, spent coolant, degreasers, etc. easy by providing appropriate receptacles. Locate waste and recycling drums in properly controlled areas off the yard, preferably areas with a concrete slab and secondary containment
- Avoid hosing down work areas
- Put leaking vehicles coming in for service under cover or immediately place drip pans under them
- Collect leaking or dripping fluids in drip pans or containers
- Keep a drip pan under the vehicle while you unclip hoses, unscrew filters, or remove other parts
- Do not pour liquid waste into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections
- Place oil filters in a funnel over the waste oil recycling or disposal collection tank to drain excess oil before disposal, then crush and recycle oil filters; ask your oil supplier or recycler about recycling oil filters.

#### Washing:

- If possible, utilize commercial car washes. They typically recycle washwater or direct it to a wastewater treatment plant.
- Create and use designated cleaning areas, preferably indoors where wash wastewater can be recycled or directed to treatment. If indoor washing is not possible, create specific areas to wash cars on gravel, grass, or other permeable surfaces.
- Block off storm drains while washing or use an insert to catch wash water. Make inserts and dams available
- Convert to use of phosphate-free biodegradable detergents

- Pump soapy water from car washes into a sanitary sewer drain. If pumping into a drain is not feasible, pump car wash water onto grass or landscaping to provide filtration
- Be sure to check state and federal requirements regarding use of the sanitary sewer system.

### ***Stormwater Facility Maintenance***

#### Inspect stormwater detention/retention facilities and other BMPs:

- Follow the inspection schedule developed during Year 2. Conduct planned maintenance activities.

#### Inspect and clean catch basins:

- Inspect each catch basin at least once annually to determine if it needs cleaning and note any repair needs. If the depth of deposits is greater than or equal to one-third the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin (EPA, 1999), have the catch basin cleaned as soon as possible. Inspect catch basins in which debris significantly exceeds the one-third depth standard twice annually.
- Dispose of sediment and debris removed from catch basins in a proper manner, as this may be classified as hazardous waste. It will require chemical analysis to determine appropriate disposal techniques.

### **Years 4 - 5: Continue Implementation of P2 Policies and Practices for the O&M Program**

#### Implement O&M Program initiated during Year 3:

You should continue to implement the O&M Program throughout Years 4 and 5.

## **POLLUTION PREVENTION & GOOD HOUSEKEEPING TRAINING**

### **What Does This Section Address?**

This section provides more detail on how to train municipal employees in pollution prevention and good housekeeping. Getting employees involved in pollution prevention is the key to a successful program.

### **What Do I Need to Do and By When?**

To meet this requirement, you must (1) conduct basic awareness training of your municipal employees regarding stormwater management and (2) ensure that your employees understand the new procedures developed in the O&M Program described in the previous section.

You must also establish a basic level of awareness of stormwater issues among municipal employees, especially those in management and those responsible for implementing the O&M Program. The educational materials provided to you under the Public Education and Outreach Minimum Control Measure will be used for that awareness training

Training employees on proper procedures is a routine function in most municipalities. The permit requirement under this Minimum Control Measure simply involves incorporating the new procedures developed for the two target areas of the O&M Program - inspection, maintenance and repair of stormwater facilities. The relevant employees need to know what is expected of them, based on the permit requirements and commitment of the municipality in this Protocol.

Employee training is a routine function in municipalities and therefore the costs for incorporating stormwater issues is not reimbursable under Act 167.

## OTHER OPTIONAL OPERATIONS, MAINTENANCE AND GOOD HOUSEKEEPING BMPS

### Other BMPS

The BMPs described above are the minimum measures required for the DEP-approved program under this *Protocol*.

Some municipalities may wish to implement additional BMPs, and several which are particularly useful are described below.

#### Deicing Operations

Find an alternative to road salt.

Use of deicing materials other than salt in areas that drain to environmentally sensitive areas (e.g., Special Protection Waters). It is up to you to determine what you consider to be an environmentally sensitive area. Research alternative deicing materials. A list of references to help start your research is below.

- Technical Release: HITEC Releases ICE BAN® Evaluation Report  
<http://www.dep.state.pa.us/dep/deputate/pollprev/technology/techalpa/articles/hitec.html>

Establish "Snow storage areas."

Designate "Snow storage areas" around the municipality for temporary storage of snow that has been removed from the roadways. All Snow storage areas should be at least 100 feet from surface waters or groundwater drinking water sources.

- Locate all new salt/deicing material storage piles outside the 100-year floodplain.
- Continue operations of any existing storage piles within the 100-year floodplain until you use all materials. After you use materials at these locations, close and relocate the storage area outside the 100-year floodplain.
- Cover all new salt/deicing material storage piles with tarps, hard shelters or contain them with dikes or berms.

Establish Proper Application Techniques

- Apply deicing materials according to manufacturer's recommendations for the given circumstance. When determining the amount to apply, consider road width, traffic concentration, proximity to surface waters, and road temperature to prevent overapplication.
- Use trucks with calibration devices on their spreaders exclusively.
- Avoid applying deicing materials near surface waters, groundwater drinking water sources or other environmentally sensitive areas. In areas which drain to HQ/EV waters, apply alternative deicing materials such as sand or salt substitutes.

Cleaning Snow Storage Areas

- Clean each snow storage area after snow has melted by collecting debris and trash picked up in the snow removal process. This will aid in preventing floatables from entering surface waters.

#### Landscaping

Ensure applicators have state license.

Application:

- Pretest soils to determine proper application rates.
- Apply fertilizer, herbicides, and pesticides exactly according to manufacturer guidelines, as more is not always better in the case of chemical application.
- Ensure all applicators are licensed by the state. Require applicators to attend training to keep abreast of proper application techniques as detailed in the Pollution Prevention Training section.

## APPENDIX 1

### REFERENCES AND RESOURCES

**GENERAL: CD with Reference and Resource materials**—DEP has prepared a compendium of materials to help municipalities and other MS4s implement the Minimum Control Measures. The CD contains all DEP provided material in electronic format for printing, distributing or web posting by MS4s. It is also available from the DEP stormwater website, [www.dep.state.pa.us](http://www.dep.state.pa.us), directLINK “stormwater.”

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#### **BMP References:**

##### **Pennsylvania Handbook of Best Management Practices for Developing Areas (1997)**

Address: PACD

225 Pine St.  
Harrisburg, PA 17101  
(717) 236-1006 - telephone  
(717) 236-6410 - fax

Website: [http://www.pacd.org/products/bmp/bmp\\_handbook.htm](http://www.pacd.org/products/bmp/bmp_handbook.htm)  
[http://www.pacd.org/products/bmp/bmp\\_orderform.htm](http://www.pacd.org/products/bmp/bmp_orderform.htm)

Cost: web download – free (limited browser version)  
printed version - \$20-30

##### **2000 Maryland Stormwater Design Manual (10/2000)**

Address: Maryland Department of the Environment  
Water Management Administration  
Nonpoint Source Program  
2500 Broening Highway  
Baltimore, MD 21224  
(410) 631-3543 or 1-800-633-6101

Website: [http://www.mde.state.md.us/environment/wma/stormwatermanual/Manual\\_CD/Introduction.pdf](http://www.mde.state.md.us/environment/wma/stormwatermanual/Manual_CD/Introduction.pdf)  
<http://www.mde.state.md.us/environment/wma/stormwatermanual/publist2.htm>

Cost: October 2000 edition, web download – free  
April 2000 edition, printed version - \$25

#### ***Center for Watershed Protection***

<http://www.cwp.org>

##### **Delaware Conservation Design For Stormwater Management Guidance Manual (1997)**

Address: DNREC  
Division of Soil and Water Conservation  
Sediment and Stormwater Program  
89 Kings Highway  
Dover, DE 19901

Website: <http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/Stormwater/Apps/DesignManualRequest.htm>

Cost: \$25

**Revised Manual for New Jersey: Best Management Practices for Control of Nonpoint Source Pollution from Stormwater (5/2000, 5<sup>th</sup> draft)**

Address: NJDEP  
Division of Watershed Management  
Sandra A. Blick  
PO Box 418  
Trenton, NJ 08625-0418  
H2Oshed@dep.state.nj.us  
Website: <http://www.state.nj.us/dep/watershedmgt/bmpmanual.htm>  
Cost: web download - free

**New York State Stormwater Management Design Manual (10/2001)**

Address: New York State  
Department of Environmental Conservation  
625 Broadway  
Albany, NY 12233  
Website: <http://www.dec.state.ny.us/website/dow/swmanual/swmanual.html>  
Cost: web download - free

**OTHER**

Bertram, Bruce, and Wolf, Jim, P.E. "Ground Water & Source Water Protection: Structural and Non-structural controls for Effective Management of Salt Storage Piles." Presented to the Ground Water Protection Council Award Forum, September 25, 2001, Reno, NV.  
<http://www.saltinstitute.org/pubstat/wolf-betram.html>

City of Allentown, PA, "City of Allentown Stormwater Best Management Practices." City of Allentown, Revised December, 2001.

**EPA:**

United States Environmental Protection Agency, Office of Water, Washington, D.C. EPA 832-F-99-011 September 1999.

United States Environmental Protection Agency, Office of Water (4503F), Washington, D.C., EPA-841-F-95-008b October 1995.

[http://www.epa.gov/npdes/menuofbmps/poll\\_16.htm](http://www.epa.gov/npdes/menuofbmps/poll_16.htm)

[http://www.epa.gov/npdes/menuofbmps/poll\\_12.htm](http://www.epa.gov/npdes/menuofbmps/poll_12.htm)

[http://www.epa.gov/npdes/menuofbmps/poll\\_8.htm](http://www.epa.gov/npdes/menuofbmps/poll_8.htm)

[http://www.epa.gov/npdes/menuofbmps/poll\\_11.htm](http://www.epa.gov/npdes/menuofbmps/poll_11.htm)

Common Sources of Groundwater Contamination,  
[http://www.dep.state.pa.us/dep/deputate/watermgmt/wc/subjects/srceprot/whpovr\\_tbl1.htm](http://www.dep.state.pa.us/dep/deputate/watermgmt/wc/subjects/srceprot/whpovr_tbl1.htm).

Salt Institute, "Proper Salt Storage." <http://www.saltinstitute.org/39.html>

Salt Institute, "Salt Institute Voluntary Salt Storage Guidelines for Distribution Stockpiles."  
<http://www.saltinstitute.org/51.html>.

<http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/document/letitlay.htm> (mowing).

<http://www.epa.gov/npdes/pubs/spillprv.pdf>.

<http://www.epa.gov/npdes/pubs/swcontam.pdf>.

<http://www.epa.gov/npdes/pubs/empltrng.pdf>.

<http://www.epa.gov/npdes/pubs/catchbas.pdf>.

<http://es.epa.gov/oeca/fedfac/cfa/vmf/area6.html>.

<http://www.epa.gov/npdes/pubs/visnspct.pdf>.

<http://www.dnrec.state.de.us/del-auto.htm>.

<http://www.dnrec.state.de.us/delfltmg.htm>.

<http://es.epa.gov/oeca/ofa/pollprev/vehicle.html>.

<http://www.ccar-greenlink.org/documents/cat1100/doc1104.html>.

<http://www.pca.state.mn.us/water/pubs/8-04.pdf> (vehicle washing).

<http://es.epa.gov/oeca/fedfac/cfa/vmf/p2vehwash.html> (P2 @ vehicle washing).

## APPENDIX 2

### STORMWATER MANAGEMENT ACT (ACT 167) PLANNING FUNDING AVAILABILITY TO MUNICIPALITIES

#### Background on Act 167

In Pennsylvania, Act 167 (32 P.S. §§ 680.1 *et seq.*) provides for the preparation of watershed-based stormwater management plans by counties with the assistance of municipalities, and the implementation of such plans by municipalities. These stormwater management plans must be designed to preserve and restore the flood carrying capacity of Commonwealth streams, to preserve, to the maximum extent practicable, natural stormwater runoff regimes and natural course, current and cross section of waters of the Commonwealth, and to protect and conserve groundwater and groundwater recharge areas.

Act 167 establishes the minimum requirements for stormwater plans. Counties can also add additional elements with the approval of DEP. Many of the required elements of the county plan to be implemented by the municipalities are consistent with the MS4 minimum measures, and additional elements required by the federal MS4 requirements can be added.

For instance, the Act 167 plans are developed with input from a broad based local advisory committee and are subject to public comment. The plans are implemented at the municipal level and any alteration or development (or redevelopment) of land which may affect stormwater runoff characteristics must be done in a manner consistent with the plan (e.g., construction and post-construction controls that are required as appropriate to the watershed). In addition, the plan must be reviewed and, if necessary, revised every five years (which correlates with the five year NPDES General Permit term).

Under EPA's regulations, all municipalities within a watershed may jointly apply for a permit (or coverage under a General permit). Therefore, the Pennsylvania Act 167 program is well-suited for use in meeting the municipal permit requirements.

#### Funding Opportunities for MS4s

Act 167 provides for reimbursement of planning and implementation of stormwater management plans under a 75/25 cost-share arrangement. Therefore, Act 167 can be used to provide up to 75% funding for the allowable costs of development and implementation of many of the required MS4 Minimum Control Measures. This approach provides the opportunity for significant cost savings for small MS4s and provides enhanced protection of the environment through the watershed-based approach.

This Protocol is DEP's pre-approved program for meeting all MS4 permit requirements. The Act 167 program now has an "MS4 module" containing stormwater management activities which are consistent with this Protocol. For example, the MS4 requirement to develop a map of the storm sewer system outfalls is part of that MS4 module in the Act 167 program, and MS4s may get reimbursement for those activities as described in the module. Contact the Stormwater Management program for details.

For funding/reimbursement purposes, here is a summary of the relationship between Act 167 and MS4 elements:

MS4 BMP Category	Act 167
Public Education and Outreach	Limited funding because DEP will provide materials for municipalities to use
Public Participation/Involvement	Some funding for public notices, hearings and involvement/outreach during development of the watershed plan.  DEP resource materials will be available for optional elements
Illicit Discharge Detection and Elimination	Reimbursement will be allowed for reasonable costs of system mapping of outfalls, as well as reasonable costs for enacting the ordinance and field screening, per DEP guidance in the Stormwater Management Program

Construction Site Runoff Control	Only very limited funding (e.g., enactment of the ordinance) because this can be funded through a fee-based approach by the municipality, and educational materials are available from DEP
Post-Construction Runoff Control	In accordance with 25 Pa. Code Chapter 111
Pollution Prevention/Good Housekeeping for Municipal Operations	Some funding available, per DEP guidance

Act 167 funding is only available for municipalities participating in a multi-municipal watershed-based plan under Act 167, approved by DEP.

Existing Act 167 plans and implementing municipal ordinances will need to be revised to include and to reference MS4 Minimum Control Measures. MS4s in these watersheds will need to arrange for a plan update on the same time schedule as other MS4s not already involved in the Act 167 program.

DEP has developed a Model Stormwater Management Ordinance for municipalities that can be used to meet the Act 167 and MS4 requirements. This model ordinance will address the several elements of MS4 requirements requiring a local ordinance—illicit discharges, construction and post-construction. This model ordinance will be available for use by municipalities, including those that do not choose to use the Act 167 funding mechanism. DEP will also be streamlining the existing Act 167 plan development process to facilitate the transition to a coordinated Act 167/MS4 program.

While the Act 167 funding described here is authorized, if the appropriations are not sufficient to fund every MS4's stormwater program, the MS4 must still meet the permit requirements.

MS4s and counties interested in participating in the Act 167 process should contact the Division of Water Use Planning, 717-783-7420.