

Georgia Environmental Protection Division

Guidance Document

Phase II MS4 **Storm Water Management Program** **Preparation**



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Table of Contents

	<u>Page</u>
Chapter One: Background Information.....	4
Chapter Two: Identifying Water Quality Problems.....	6
Chapter Three: Best Management Practices.....	8
Chapter Four: Measurable Goals.....	10
Chapter Five: First Minimum Control Measure Public Education and Outreach on Stormwater Impacts.....	13
Chapter Six: Second Minimum Control Measure Public Involvement/ Participation.....	18
Chapter Seven: Third Minimum Control Measure Illicit Discharge Detection and Elimination.....	22
Chapter Eight: Fourth Minimum Control Measure Construction Site Stormwater Runoff Control.....	29
Chapter Nine: Fifth Minimum Control Measure Post-Construction Storm Water Management in New Development and Redevelopment.....	39
Chapter Ten: Sixth Minimum Control Measure Pollution Prevention/Good Housekeeping for Municipal Operations.....	48
Chapter Eleven: Data Management and Reporting.....	55
Chapter Twelve: Enforcement Response Plan.....	57
Chapter Thirteen: Impaired Waters Plan.....	62

List of Tables

<u>Tables</u>	<u>Page</u>
Table 1: Measurable Parameters - Public Education and Outreach	16
Table 2: Measurable Parameters - Public Involvement/ Participation.....	20
Table 3: Measurable Parameters - Illicit Discharge Detection and Elimination.....	27
Table 4: Measurable Parameters - Construction Site Storm Water Runoff Control.....	33
Table 5: Measurable Parameters - Post-Construction Storm Water Management in New Development and Redevelopment.....	43
Table 6: Measurable Parameters - Pollution Prevention/ Good Housekeeping for Municipal Operations.....	52

Chapter One **Background Information**

The Federal Phase II Stormwater regulations, 40 CFR Part 122.33, require an operator of a small municipal separate storm sewer system (MS4) to apply for coverage under an NPDES permit for discharges from its storm sewer system. In Georgia, a general NPDES permit is used for all small MS4s. A general permit includes requirements that apply to all permittees, as opposed to an individual permit, which is tailored to a specific permittee. To apply for a general NPDES permit, a permittee must file a Notice of Intent (NOI) to be covered under the permit. The Georgia Environmental Protection Division (EPD) has developed an NOI form for use by small MS4s. Any small MS4 applying for coverage under the general NPDES permit must return this completed NOI form to EPD.

The regulations require that you develop, implement and enforce a Storm Water Management Program (SWMP) designed to reduce the discharge of pollutants from your MS4 to the “Maximum Extent Practicable” to protect water quality. The MS4 will not be required to treat storm water to comply with numerical discharge standards. Instead, you will be required to implement best management practices (BMPs), which reduce pollutants prior to their discharge into the storm sewer system.

The SWMP will consist of 6 minimum control measures (MCMs). These measures are as follows:

- Public education and outreach on storm water impacts;
- Public involvement/participation;
- Illicit discharge detection and elimination;
- Construction site storm water runoff control;
- Post-construction storm water management in new development and redevelopment; and
- Pollution prevention/good housekeeping for municipal operations.

For each of the 6 MCMs, you will need to select BMPs and set measurable goals. The steps the MS4 should undertake to select BMPs and set measurable goals will be discussed in future chapters.

In addition to the 6 MCMs, the SWMP will need to include an Enforcement Response Plan (ERP) and an Impaired Waters Plan. These two documents must be submitted as appendices to the SWMP in accordance with the schedules established in the NPDES Permit. A discussion on these documents will be provided in later chapters.

The MS4 will need to ensure adequate resources are dedicated to the implementation of the SWMP. This includes adequate funding, staffing, and materials. One of the most important steps in establishing a SWMP is to determine a dedicated source of funding. The funding can be provided in different ways, such as through creation of a stormwater utility or the use of a general fund.

Chapter Two **Identifying Water Quality Problems**

In order to develop a SWMP, the first step must be to identify water quality problems within your jurisdiction. For example, has the MS4 noted an increase of debris in the stream after a rain event? Have there been reports by local citizens of an oil sheen on a local stream? Has the MS4 received complaints from citizens that residential ponds are filling up with sediment? The potential problems in your area may be numerous and diverse. You may not be aware of all the problems. However, a starting point for identifying the problems is to look at any existing data. Your MS4 may have other data sources available, so the following list of sources is intended as an example only:

- Check the 305(b)/303(d) list of impaired State waters to see if any stream segments within your jurisdiction are included (available from Georgia EPD or at www.state.ga.us/dnr/environ);
- Review any existing watershed assessment reports (possibly developed due to a wastewater treatment plant expansion);
- Review any existing stream monitoring data; and
- Review any existing source water/well head protection plan.

Another method for identifying water quality problems within your area is to talk to people who may be in a position to have noticed a problem:

- Citizen complaints;
- Municipal employee observations; and
- Volunteer organizations (Adopt-A-Stream groups, Clean & Beautiful groups, etc).

You may want to identify possible sources of pollution within your jurisdiction. When developing your SWMP, it may benefit you to address possible pollutants generated at these sources. For example, you may want to consider the following potential sources of pollution:

- Commercial and retail parking lots;
- Gasoline/service stations;
- Auto repair/oil change facilities;
- Veterinary offices and pet kennels;

- Areas with septic tanks or older sanitary sewer lines;
- Car washes; and
- Industrial areas.

Finally, it may not be only known problems that you consider during development of the SWMP. You may have a valuable resource within your jurisdiction that it is your goal to protect, such as a drinking water source, a recreational area, or a trout stream.

Once you have identified the water quality problems or valuable resources within your jurisdiction and a dedicated funding source, you are ready to begin selecting appropriate BMPs and setting attainable measurable goals.

Chapter Three **Best Management Practices (BMPs)**

A BMP can be structural or non-structural. Examples of structural BMPs are detention basins or vegetated swales. A non-structural BMP can consist of a program or procedure, such as a household hazardous waste recycling program, erosion control program, or a street cleaning program. Because structural BMPs can be costly and are not always a suitable solution to correcting a water quality problem, the MS4 should explore all the possible non-structural BMPs before deciding on a structural BMP.

EPA has created a menu of BMPs. This list includes multiple BMPs for each of the 6 MCMs. The menu of BMPs can be found at cfpub.epa.gov/npdes/stormwater/menuofbmps. EPA tried to fully evaluate each of the BMPs and provide information on the effectiveness of the BMP, the implementation cost and other useful information. After reviewing the list, the MS4 may find that they are already implementing some of the BMPs. If not, the MS4 should be able to review the list and choose those BMPs which would appear to work for their situation. The MS4 should realize that the menu is just a guidance document. The MS4 is free to be creative and develop their own BMPs.

In August 2001, a document titled "Georgia Stormwater Management Manual (Volumes 1 and 2)" (referred to as the GSMM or "Blue Book") was completed. If the MS4 determines that a structural BMP is required, then the MS4 should use this manual during the design of the structural control device. If a structural BMP will be constructed, then the MS4 should develop a schedule for maintaining the structure. By not maintaining a structure, the MS4 may appear to save money. However, the effectiveness of the BMP may be reduced. The MS4 would then need to implement additional BMPs to address the problem, which may result in the MS4 spending additional money. So, it is very important that the MS4 include a maintenance schedule during the development of any structural BMP. The schedule could require periodic inspection with maintenance as needed or periodic maintenance, whichever is appropriate. The MS4 should have a system in place which allows the inspection or maintenance schedule to be tracked, either manually or through a computer database.

The number of BMPs chosen for each of the 6 MCMs will vary. The NPDES Permit contains specific BMPs that the MS4 must implement for four of the six MCMs. However, the MS4 may implement additional BMPs other than those listed. Some MCMs (e.g. Public Education, Public Involvement) in the Permit do not list specific BMPs. For these MCMs, the MS4 must determine the BMPs to be implemented. At a minimum, you must have two BMPs for each MCM. The MS4 may determine that only two BMPs are needed to address a water quality problem. The MS4 should not limit themselves to only two BMPs if they think a third or additional BMP will prove effective. Also, the number of BMPs needed may depend on the size of a MS4. Due to a larger population, an increased number of pollution sources, and increased impervious surface area, a larger MS4 may have more identified water quality problems. Therefore, a larger MS4 may need to implement more BMPs and develop a more complex SWMP.

The SWMP is meant to be flexible and constantly evolving. The MS4 can try a BMP, determine it is not effective or too costly, and replace it with a new BMP, as long as the BMPs required by the NPDES Permit are retained. The MS4 may identify a new water quality problem several years after the SWMP was completed. Therefore, the MS4 might need to implement a new or additional BMP at that time. You may also find after you begin to implement a BMP that your measurable goals require revision. Any proposed changes made to the BMPs, measurable goals, or implementation schedules should be submitted in writing to EPD. EPD will review the proposed revision and provide a written acceptance or denial of the proposal.

You may share responsibility with another entity for implementing an MCM or a specific BMP. You must have a written agreement (e.g. Memorandum of Agreement) with the other entity clearly stating that they will implement the control measure or BMP on your behalf. You must submit a copy of this agreement to EPD. You will still have to submit an NOI form, all annual reports, and any other information that EPD requests. If the other entity does implement a control measure for you, then you will need to explain that in the annual report. In addition, you will need to either provide a summary of the other entity's activities on your behalf, or have the other entity prepare a summary of its activities for you to submit with your annual report.

For example, you are a Phase II City. The County has agreed to implement a public education program for septic tank maintenance on your behalf. You will need to have a written agreement with the County and submit a copy of the agreement to EPD. When it comes time to prepare the annual report, you need to explain that the County has performed this task on your behalf and provide a summary of what activities they undertook during the reporting year (e.g. created a brochure, distributed 200 brochures throughout the County, held two training seminars). You can write the summary of what the County did, or they can prepare a summary for you to submit with your annual report. These steps will need to be taken whether you enter into an agreement with another governmental agency, a volunteer organization (Clean & Beautiful, Adopt-A-Stream, scout troop, environmental group, etc), or an educational institute (e.g. local university).

You need to be aware that there is liability involved by allowing another entity to implement a control measure or BMP on your behalf. If the other entity agrees to implement the measure, but fails to perform the task, you may be liable for EPD enforcement action. Therefore, it is very important that you have a close working relationship with the other entity before entering into the agreement.

The general NPDES Permit will specify the time frames for implementation of each BMP. If you are already implementing a BMP or can implement a BMP earlier than is specified in the Permit, then your SWMP should reflect this through a shortened schedule. You may still revise the SWMP as needed over time; however, the revisions should happen infrequently after the program has been implemented for several years.

Chapter Four **Measurable Goals**

Once you determine which BMPs you will use, then you must set a measurable goal for each BMP. Measurable goals allow you to track the effectiveness of each BMP and the overall progress of your SWMP. You should review any existing BMPs the MS4 may already be implementing. If you determine the BMP should be retained, then you need to set a measurable goal for that BMP. Also, each newly proposed BMP will need to have a corresponding measurable goal. In some cases, measurable goals were established in the NPDES Permit and the MS4 will be required to comply with those goals. For example, some BMPs set an annual percentage of structures to be inspected or set a deadline date for development of a procedural document. For BMPs where a measurable goal was not defined in the Permit, you will need to establish the goal. Following is some general information on how to set measurable goals. In subsequent chapters dealing with each of the 6 MCMs, more specific information tailored to the possible goals for that control measure will be discussed.

When setting a measurable goal, the MS4 needs to establish an implementation schedule. The schedule can be written in one of two ways. The first method is for those BMPs that will take time to implement (e.g. construction of a control structure, mapping the storm sewer system). For this type of BMP, the implementation schedule needs to include a start date, interim milestone dates, and a date for completion.

The second type of BMP will require an implementation schedule that either tracks how often a BMP is performed (e.g. conducting an annual workshop for MS4 employees) or the total number of an item (e.g. number of brochures to be distributed annually). For some BMPs, a scheduled completion date was established in the NPDES Permit and the MS4 should incorporate this date into their implementation schedule.

The MS4 will need to establish a method to track the implementation schedule and determine when the goal is achieved. You may develop a database which allows tracking of milestone dates and/or activities, use a manual tracking method, or choose some other tracking method. This information will be useful when the MS4 is compiling the annual report for submittal to EPD.

Once you have established the measurable goal and implementation schedule for each BMP, you will need to have procedures in place for evaluating the effectiveness of the BMP and if the goal is being achieved. In order to do this, you will need to establish a baseline condition and compare it against a quantifiable target. Establishing the baseline condition can consist of something as simple as photographing a stream segment, which shows the condition of the stream at a given time. Photographs are inexpensive, easy to do, and are easily understood. You may decide to document a baseline condition using another method, such as stream monitoring to establish a water quality baseline. You can set a baseline based on the number of BMPs in existence (e.g. the number of existing detention basins). Other methods of establishing baselines are also available and the MS4 should explore all possible options.

In order to determine if the BMP is being effective, the MS4 will need to establish a quantifiable target to compare against the baseline condition. The most ideal way to determine BMP effectiveness is through the use of stream monitoring. Instream monitoring allows the MS4 to measure environmental improvements and track water quality trends over time. However, water quality monitoring can be expensive, so the MS4 should explore other methods for evaluating BMP effectiveness. For example, the MS4 may have determined a control structure required modification in order to increase pollutant removal and the amount of increased pollutant removal efficiency can be quantified to show the BMP is being effective. In another example, the MS4 may have had a problem with trash in a stream, but there have been fewer complaints and less noticeable debris over the years.

EPA has developed a guidance document for measurable goals that can be found at www.epa.gov/npdes/pubs/measurablegoals.pdf. As part of this guidance, they list the following 26 indicators that can be used to evaluate the effectiveness of a BMP. The list is not all inclusive and the MS4 is encouraged to select the best method to determine the effectiveness of each BMP.

Category	Number	Indicator Name
Water Quality Indicators	1	Water quality pollutant constituent monitoring
	2	Toxicity testing
	3	Loadings
	4	Exceedance frequencies of water quality standards
	5	Sediment contamination
	6	Human health criteria
Physical and Hydrological Indicators	7	Stream widening/downcutting
	8	Physical habitat monitoring
	9	Impacted dry weather flows
	10	Increased flooding frequency
	11	Stream temperature monitoring
Biological Indicators	12	Fish assemblage
	13	Macroinvertebrate assemblage
	14	Single species indicator
	15	Composite indicator
	16	Other biological indicators
Social Indicators	17	Public attitude surveys
	18	Industrial/commercial pollution prevention
	19	Public involvement and monitoring
	20	User perception
Programmatic Indicators	21	Number of illicit connections identified/corrected
	22	Number of BMPs installed, inspected, maintained
	23	Permitting and compliance
	24	Growth and development

Site Indicators	25	BMP performance monitoring
	26	Industrial site compliance monitoring

Each chapter for the 6 MCMs will include more specific information on setting measurable goals and evaluating their effectiveness.

Chapter Five
First Minimum Control Measure
Public Education and Outreach on Stormwater Impacts

Regulatory Requirement, 40 CFR Part 122.34(b)(1):

You must implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impact of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

Guidance:

As explained in Chapter 2, the first step you need to take is to identify the water problem areas in your community. This will allow you to determine who your “target audience” will be. Following are two examples to show you how the process should occur.

Example #1:

Employees of the water and sewer department have noticed an increased algae growth on a local lake. They have inspected all the sewer lines in the area and determined that there are no lines leaking sanitary sewage to the lake. The local health department has received numerous complaints of leaking septic tanks within the past 6 months. Therefore, it would benefit your community to target your public education program towards homeowners on the importance of maintaining their septic tank systems.

Example #2:

You have received complaints from local citizens of an oil sheen on a local stream. This could indicate the improper disposal of motor oil either from a resident or an automotive repair facility. If the stream is located in a residential area, you will want to target your educational program towards the proper disposal of used oil by citizens, including possibly providing an acceptable disposal location. If the stream is located in a commercialized business district, then you would want to develop educational materials more tailored to business types, such as automotive repair facilities or auto part stores.

These two scenarios are just examples in order to describe the process you should go through to identify the water quality problem within your jurisdiction and the

potential target audience. Some other potential audiences to consider when developing your SWMP include:

- Subdivision homeowner associations;
- Builders and construction contractors;
- Community groups;
- Minority organizations;
- School children;
- Commercial businesses (e.g. restaurants, landscapers, auto repair facilities); and
- Industries.

During the development of your public education program, you will also need to determine the type of educational materials you will use. You should ensure you choose materials that will adequately convey your message to the largest available audience. You want to try to use the most effective means for conveying your message at the least amount of cost (i.e. “the most bang for your buck”).

You can use print materials (e.g. brochures, utility bill inserts) or the media (newspaper, radio, television). You will need to determine the best method to disseminate your message depending on your budget. You may use existing educational materials from EPA or other organizations or you may create your own. If possible, you should try to involve individuals and civic groups (e.g. Adopt-A-Stream, Clean & Beautiful) in educating other members of the public, such as through storm drain stenciling programs or stream clean-up events.

One of the most effective means of distributing educational materials is through the use of a website. The website can be constantly updated with new information. The MS4 advertises the website through its other educational materials, such as by including the website address on educational brochures. A “counter” can be placed on the website to track the number of visitors. This will allow the MS4 to evaluate the effectiveness of the website as an educational tool.

After determining the water quality problems in your area and your target audience, then you need to select potential BMPs. EPA has provided numerous examples of BMPs in their “menu of BMPs”. They have suggested BMPs for educating homeowners, commercial businesses, and various specific communities. It is recommended that you review these potential BMPs to determine if any will work for your community. You may also be creative and develop your own BMPs.

The final step is to establish a measurable goal for each BMP. The goal should be specific for each BMP. For example, to address the problem of algal blooms on the

lake, you decided the appropriate BMP is to educate homeowners on the importance of septic tank maintenance. You have decided to develop and distribute an informational brochure. Your measurable goal for this BMP will be to complete development of the brochure within 6 months and distribute the brochure to 200 homeowners annually.

EPA has developed a list of parameters the MS4 can use when establishing the measurable goals for the Public Education and Outreach MCM. We have listed these parameters in Table 1 for your convenience.

Table 1
Measurable Parameters
Public Education and Outreach

Classroom Education on Storm Water

- The number of educational materials distributed to schools.
- The number of classes, schools, or students that participate in municipal-sponsored storm water workshops or activities.
- The number of workshops held for teachers on storm water education.
- The number of certificates or other rewards given out for classes/students who participate in storm water education.
- The number of students receiving storm water education as a regular part of the school curriculum.
- The number of students receiving storm water education as part of after-school programs.

Education/Outreach for Commercial Activities

- The number of educational materials that were distributed to business owners and operators.
- The number of businesses trained under a training program.

Educational Displays, Pamphlets, Booklets, and Utility Stuffers

- The number of materials created and distributed.
- The number of events attended with displays.
- The number of people at an event who saw the display (guest book) or took a pamphlet/booklet.

Lawn and Garden Activities

- The number of partnerships established with local lawn care businesses.
- The number of partnerships established with lawn care suppliers/retail stores.
- The number of municipal employees trained in proper lawn care practices.
- The number of homeowners that attend training workshops for lawn/garden care BMPs.
- A survey of homeowners about their lawn care behavior before and after message is delivered.

Low Impact Development

- The number of meetings held to educate citizens and developers about low impact development.

Pet Waste Management

- The number of “clean up after your pet” signs posted in parks or neighborhoods.
- The number of dog-walking designated areas in parks.
- The number of posters/brochures put up in pet supply stores.
- The number of educational materials given out to pet owners.

Promotional Giveaways

- The number of items given out.
- The number of events attended (to give out items).
- The number of partnerships with radio and TV stations for promotions.

Proper Disposal of Household Hazardous Wastes

- The number of educational materials distributed to homeowners.
- The number of partnerships established with businesses.

Tailoring Outreach Programs to Minority and Disadvantaged Communities and Children

- The number of brochures/posters created in non-English languages.
- The number of partnerships established with minority organizations.
- Attendance at workshops or public meetings held in low-income or minority neighborhoods.
- The number of educational materials distributed to low-income neighborhoods.

Trash Management

- Track the number of additional trash bins installed and signage posted.

Using the Media

- The number of public service announcements made on radio and TV.
- The number of storm-water-related press releases.
- The number of storm-water-related articles published.

Water Conservation Practices for Homeowners

- The number of partnerships established with local water utilities.
- The number of water conservation utility inserts that are distributed with utility bills.
- A survey of homeowners about their water conservation behavior before and after the message is delivered.

Chapter Six
Second Minimum Control Measure
Public Involvement/Participation

Regulatory Requirement, 40 CFR Part 122.34(b)(2):

You must, at a minimum, comply with State and local public notice requirements when implementing a public involvement/participation program.

Guidance:

It is recommended that you involve citizens from your community in both the development and the implementation of the SWMP. If possible, you should try to engage all economic and ethnic groups. By involving the citizens in the decision-making process, you have the potential to garner more support for various aspects of the program, including funding. Also, you may be able to use volunteer labor to implement some of your SWMP BMPs, as opposed to MS4 employees performing the tasks.

During the SWMP development, you might involve the public by holding meetings with stakeholders in the community. The meetings would serve as a forum where the stakeholders can express their concerns regarding local stormwater issues. The citizens may be able to provide ideas on how to improve any existing stormwater BMPs. Also, after the program is drafted, you may want to hold public meetings to educate the public on the proposed program. The public will be able to provide feedback during the meetings and you may gain support for the proposed program.

After the SWMP development is complete, you may involve the public in the implementation of the program. The involvement may consist of periodic meetings with stakeholders to discuss the program's progress in addressing stormwater issues. The involvement may be more of a "hands-on" approach. Stakeholder groups may participate through such things as stream clean-ups, road clean-ups, or storm drain stenciling programs. Also, community groups or citizens may participate in the SWMP implementation by performing periodic monitoring of a water body.

Example #1

During the SWMP development, the MS4 creates a panel of citizens taken from several sectors of the community (e.g. commercial businesses, industries, homeowners, environmental groups). The MS4 holds sessions with the citizen panel to allow an exchange of ideas on what water quality problems they perceive exist in the community and what the goals of the SWMP should be.

Example #2

You can also involve the public in implementation of the SWMP. An area stream contains a large amount of litter and the water quality is noticeably degraded. The MS4 forms a partnership with a local citizen group (e.g. civic organizations, high school environmental class, scout troop) to perform periodic stream clean-ups and basic water quality monitoring.

As discussed in Chapter 5, Public Education and Outreach, it is important to identify your “target audience”. This will allow you to determine which civic or community groups the MS4 can potentially involve in the development and implementation of the SWMP. You may want to consider the following stakeholder groups:

- Commercial and industrial businesses;
- Trade associations;
- Environmental groups;
- Civic organizations;
- Homeowner associations; and
- Educational groups.

Once you have identified the target audience, you must select BMPs and set a measurable goal for each BMP. Suggested BMPs can be found in EPA’s “menu of BMPs” or you may develop your own. As previously explained, the measurable goal must be a quantifiable target. For example, you determine a BMP will be to involve the public in implementation of the SWMP by conducting an annual Rivers Alive Stream Cleanup. Your measurable goal for the BMP is to host one event annually and to track the number of residents that participated in the event each year and/or how many tons of trash were removed from the stream.

EPA has developed a list of parameters the MS4 can use when establishing the measurable goals for the Public Involvement/Participation MCM. We have listed these parameters in Table 2 for your convenience.

Table 2
Measurable Parameters
Public Involvement/Participation

Adopt-A-Stream Programs

- Track the number of participants in Adopt-A-Stream programs.
- The number of volunteer monitoring stations established in the watershed.
- The number of volunteer monitoring training sessions held.
- Water quality at Adopt-A-Stream sites.

Attitude Surveys

- The number of citizens solicited to complete surveys.
- The number of completed surveys.
- A survey of citizens gauging change in attitude/behavior after storm water education activities are held.

Community Hotlines

- The number of hotlines established to handle stormwater related concerns.
- The number of calls received by hotlines.
- The number of problems/incidents remedied as a result of hotline calls.

Reforestation Programs

- The number of volunteer tree planters.
- The number of trees planted.
- The number of acres planted with trees.

Stakeholder Meetings

- The number of meetings held.
- The number of attendees.
- The number of actions taken as a result of stakeholder meetings.

Storm Drain Stenciling

- The number of drains or proportion of drains stenciled.
- The number of stenciling volunteers.
- Changes in water quality at outfalls of stenciled areas.

Stream Clean-up and Monitoring

- The number of stream clean-ups.

- The number of clean-up participants.
- The quantity of waste collected as a result of clean-up efforts.
- The number of stream miles cleaned.
- Water quality at the stream clean-up sites.

Watershed Organization

- Whether or not a watershed organization was established.
- The number of participants in the watershed organization.
- The number of actions taken as a result of the watershed organization.

Wetland Plantings

- The acres of land planted.
- The number of volunteers that participated in planting.
- The number of planting events held.

Adopt-A-Road Programs

- The number of road miles adopted.
- The number of participants.
- The quantity of trash removed by volunteers.

Proper Disposal of Household Wastes

- Quantity of household hazardous waste collected on amnesty days.
- Number of participants in household hazardous waste amnesty days.
- Quantity of household waste materials recycled annually.
- Number of homeowners visiting a community recycling center.

Chapter Seven
Third Minimum Control Measure
Illicit Discharge Detection and Elimination

Regulatory Requirement, 40 CFR Part 122.34(b)(3):

You must develop, implement and enforce a program to detect and eliminate illicit discharges into your small MS4.

- A. You must develop, if not already completed, a storm sewer system map, showing the location of all outfalls and names and locations of all waters of the State that receive discharges from those outfalls.
- B. You must, to the extent allowable under State or local law, effectively prohibit through ordinance, non-storm water discharges into your storm sewer system and implement appropriate enforcement procedures and actions.
- C. You must, develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to your system.
- D. You must inform public employees, businesses, and the general public of hazards associated with illegal discharges or improper disposal of waste.

You need to address the following categories of non-storm water discharges or flows (i.e. illicit discharges) only if you identify them as significant contributors of pollutants to your small MS4:

- Water line flushing;
- Landscape irrigation;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration;
- Uncontaminated pumped ground water;
- Discharges from potable water sources;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water;
- Springs;
- Water from crawl space pumps;
- Footing drains;
- Lawn watering;
- Individual residential car washing;
- Flows from riparian habitats and wetlands;
- Swimming pool discharges; and

- Street wash water.

Guidance

The MS4 will need an ordinance which prohibits illicit discharges, gives the MS4 the right to enter the property, the authority to require illicit connections to be removed, and allows enforcement against an ordinance violator. Examples of model ordinances can be found at EPA's website: www.epa.gov/owow/nps/ordinance. Also, the Metropolitan North Georgia Water Planning District (District) developed model ordinances for adoption by those permittees located within the District (www.northgeorgiawater.org). However, it is acceptable for permittees located outside of the District to also adopt these ordinances.

You are required to develop a storm sewer system map, showing all outfalls and waters of the State that receive discharges from these outfalls. In addition, the permit requires that you inventory and map all other storm sewer system structures (catch basins, ditches, detention/retention ponds, and storm drain lines). This will facilitate the tracking of illicit discharges and the operation and maintenance of your MS4.

The complexity of your system will determine the type of map you develop. For a larger storm sewer system, you may be able to develop a map showing your jurisdictional boundaries, with areas color-coded to show the land use (e.g. agricultural, industrial, residential). You could then add the receiving waters, the storm sewer system conveyances, and the outfalls to this map. However, not every MS4 will have the equipment (i.e. GIS), capabilities, or funds to create this complex a map. In those cases, the MS4 should use whatever method works for them. For example, you may be able to take a topographical or road map, draw in any receiving waters, storm sewer lines and outfalls. In some cases, where only a few outfalls exist in a very small municipality, even a hand-drawn map may be sufficient. You should be aware that the purpose of the map is to aid you in the detection and elimination of illicit discharges to your MS4 and not just a "busy work" exercise to comply with the regulations. Therefore, it is important that you create the best map you can with the resources you have available.

Once the storm sewer system is mapped, you should ensure procedures are in place to update the map. If new areas of your jurisdiction undergo development, then new storm sewer lines and outfalls may be created. Field verification may result in the identification of additional outfalls, or the elimination of some structures that were shown as outfalls on the original map. Annexation of additional land may result in the addition or deletion of structures from your system. The MS4 should ensure that a current inventory of outfalls is maintained and that the map is periodically updated. As defined in the NPDES Permit, an outfall is the most downstream point (i.e. final discharge point) on an MS4 where it discharges to waters of the State.

After the mapping is completed, then you should identify high priority areas that are likely to have illicit discharges. The MS4 may want to concentrate on older sections of the municipality, since these areas tend to have failing infrastructures and have

historically had less stringent building codes. The MS4 may also be aware of an area of the system that has had numerous problems in the past. These areas of the MS4 should be inspected first, or even more frequently, for illicit discharges. However, the whole system must be inspected within a 5-year period.

To conduct an illicit discharge detection program, you may either perform stream walks or outfall inspections. An outfall inspection consists of visiting an outfall to observe if a dry weather flow is present. A stream walk requires the MS4 representative to physically walk along a stream and inspect any outfalls encountered. Stream walks allow you to not only inspect outfalls, but to also document the conditions of the stream. In many cases, stream walks have allowed the permittee to identify pollution sources such as leaking sanitary sewer lines or septic tanks. These sources would not have been discovered by conducting outfall inspections only. If the MS4 chooses to conduct outfall inspections, then they must inspect 100% of the outfalls within a 5-year period. If stream walks will be performed, then the MS4 must ensure all stream miles within its jurisdictional area are walked within a 5-year period. Your SWMP will need to include a measurable goal listing the number or percentage of outfalls or stream miles to be inspected annually.

Outfall inspections and/or stream walks must be performed during a period of dry weather. The majority of permittees define dry weather as less than 0.1 inch of precipitation per day for a 72-hour period. The idea is that flow should not be discharging from an outfall during periods of dry weather. If flow is present, then a potential illicit discharge exists. If you encounter a dry weather discharge during an outfall inspection, then you must take steps to determine if the flow is naturally occurring, (e.g. spring, groundwater) or an illicit connection or discharge. The first step in the field screening process should be to note any unusual odor (e.g. sewage, petroleum, industrial), color, or the presence of an oil sheen. Some permittees immediately take a sample to a laboratory for testing, while others proceed with field testing. You may test for any parameters that you feel will allow you to identify the source of the flow. However, at a minimum, you must conduct field testing for temperature, pH, conductivity, fluoride and surfactants. You may use field test kit(s) and meter(s). If you find an exceptionally high or low pH, then it may indicate an industrial discharge. High conductivity can indicate a sewage discharge. The presence of surfactants can indicate a washwater discharge. Finally, fluoride can mean a potable water leak is entering the MS4. If your field observation notes any unusual odor or color or the field testing shows unusual levels of any parameters, then you may determine additional testing is required. If you suspect a discharge of sewage, then you may want to collect a sample for laboratory testing of fecal coliform bacteria. The test for fecal coliform bacteria requires that the holding time for the sample not exceed 6 hours. You must make sure that the sample is delivered to the laboratory in adequate time to meet this holding time requirement. If you note an oil sheen, then you may want to test for total petroleum hydrocarbons (TPH). You should use common sense when deciding if additional testing is warranted and what analyses to conduct. However, you should be aware that field and laboratory testing are not always conclusive. Any dry weather flow may be suspect. The only sure way to determine if a source of flow is naturally occurring (e.g. piped stream) is to conduct source tracing.

You need to have procedures in place for tracing the source. The most effective method is walking up the storm sewer line and looking for potential upstream sources. You may have to use more elaborate detection procedures, such as dye testing, smoke testing or televising the line. Because illicit discharges can be intermittent, you must take steps to begin source tracing immediately upon suspecting an illicit discharge. You may also have to visit the outfall several times to encounter an illicit flow at the site again.

The detection procedures may be effective for locating an illicit connection; however, they may not help the MS4 in identifying illegal dumping into the storm sewer system. If you have evaluated all potential illicit connections and determined the only source of the pollutant can be from illegal dumping, then you will need to handle this situation differently. The dumping may be occurring as a result of ignorance and the MS4 may want to escalate their educational activities in the area (e.g. homeowners dumping yard waste, used oil, or antifreeze down the storm drain). The dumping may be occurring purposely, such as from an industrial or commercial source. In such cases, the MS4 will have to use its enforcement capabilities to stop the dumping. Also, the MS4 might want to institute a citizen hotline, where the public can notify the MS4 of any observed illegal dumping.

The MS4 must have procedures in place for ensuring illicit discharges are eliminated. The procedures should clarify whose responsibility it is to ensure the discharge ceases. For example, if you conduct field testing and determine the discharge is composed of sanitary sewage or potable water, then the procedure may be that you notify the municipal water and sewer department. If it is your responsibility to ensure the discharge is eliminated, then the procedures need to specify what steps you will take to ensure the discharge ceases, the time frame for completing the task, the corrective action to be taken, any follow-up inspection, etc.

Example #1

During a stream walk, you notice flow coming from an outfall. You visually observe an oil sheen and odor to the discharge. You follow the storm sewer line upstream and find an area of commercial businesses. One of the businesses is an automotive repair facility. An inspection of the facility reveals the owner is periodically washing down the parking and repair area, which results in the washwater flowing into the storm drain. You inform the owner of the ordinance requirements and potential enforcement action if the practice does not cease.

Example #2

The MS4 is holding an annual Rivers Alive stream cleanup. During the event, a participant notices flow coming from an outfall. Knowing that it hasn't rained in several weeks, the person notifies the MS4 representative. You notice the discharge has a strong sewage odor and is gray in color. You proceed to conduct a field test of the discharge for temperature, pH, conductivity, fluoride and surfactants. You decide to take a sample for fecal coliform bacteria analysis. The laboratory results indicate a high fecal coliform bacteria count. Following the MS4's written procedures, you notify the municipal water and sewer department. They locate and repair a sanitary sewer line which has been leaking into your storm sewer system. You re-visit the outfall to ensure the problem has been fully corrected.

While performing all of the steps of an illicit discharge detection and elimination program, you must document the actions taken. This includes documenting stream walks or outfall inspections, and any field or laboratory test results. This can be done through the use of an inspection form or some other means. Often, permittees take photographs of outfalls or streams to document the conditions at the time of the inspection. Also, the permittee needs to document any steps taken to trace the source and eliminate the illicit discharge, including any enforcement actions taken.

Finally, the regulations require that the MS4 have a program in place to educate the municipal employees and the public of problems caused by illicit connections and illegal dumping. The program can include the development and distribution of educational literature. You can establish a program for informing the public how to report any observed dumping, including the establishment of a hotline. You can stencil storm drains to inform residents that anything they pour down the drain flows to the stream. These are just a few examples and the MS4 should consider all possible options.

Once you determine the BMPs you will use to detect and eliminate illicit discharges, then you will need to set a measurable goal for each BMP. EPA has developed a list of parameters the MS4 can use when establishing the measurable goals for the Illicit Discharge Detection and Elimination MCM. We have listed these parameters in Table 3 for your convenience.

Table 3
Measurable Parameters
Illicit Discharge Detection and Elimination

Failing Septic Systems

- The number of regular maintenance and inspection reminders issued to septic tank owners.
- The number of partnerships formed with private pumping companies.
- Whether or not an inventory of septic tanks and when they were last serviced was completed.
- The number of field tests and screening conducted.
- The number of post construction inspections conducted to insure proper installation.
- The number of scheduled pump-outs and routine maintenance work conducted.

Identifying Illicit Connections

- Inventory conducted and sites prioritized for inspection.
- The number of field tests conducted in high-risk areas.
- Whether or not an ordinance was developed to allow entrance into private buildings for the purpose of conducting tests.
- The number of illicit connections reported by business employees.
- The number of survey responses indicating a possible illicit connection.
- The number of illicit connections repaired/replaced.
- Whether or not an ordinance was developed for mandatory inspection of the sewer connections for new buildings.
- The number of new building connections inspected.

Illegal Dumping

- The number of flyers, posters, or other public education tools distributed.
- The number of illegal dumps reported by citizens.
- The number of penalties enforced upon the participants of illegal dumps.
- Whether or not an inventory of prime areas for illegal dumping was completed.
- The number of rewards distributed to citizens who reported an illegal dump.
- The number of illegal dump clean-ups completed.

Industrial/Business Connections

- The number of dry weather tests completed.
- The number of high-risk connections prioritized.
- The number of codes developed to prohibit connections.
- The number of illicit connections reported by business employees.
- The number of survey responses indicating a possible illicit connection.

- The number of illicit connections found.
- The number of illicit connections repaired/replaced.
- The number of new buildings inspected.
- Whether or not an ordinance was developed for mandatory inspection of the sewer connections for new buildings.

Recreational Source Sewage

- Whether or not an inventory of high-risk areas was completed.
- The number of pump-out stations installed.
- The amount of wastewater that pump-out stations collect.
- The number of no-discharge areas created.
- The number of new signs added to remind citizens of dumping policies and alternatives.
- The number of enforced cases of sewage dumping.
- The number of citizen complaints made reporting illegal action.
- The change in water quality at marinas.

Sanitary Sewer Overflows

- The frequency of routine maintenance and cleaning activities.
- The number of overflows reported.
- The number of overflow causes that were identified during inspection.
- The number of sites repaired.
- Whether or not an ordinance was developed to prohibit new and illicit connections.

Wastewater Connections to the Storm Drain System

- The number of rerouted connections.
- The number of dry weather monitoring activities performed.
- Whether or not an inventory and prioritization of potential connection sites was completed.
- The number of field tests conducted in high-risk areas.
- The number of unwarranted connections reported.
- The number of unwarranted connections found.
- The number of unwarranted connections repaired/replaced.
- Whether or not an ordinance was developed for mandatory inspections of the sewer connections to new buildings.
- The number of sewer connections for new buildings inspected.
- Changes in water quality at re-routed outfalls and high risk areas.

Chapter Eight
Fourth Minimum Control Measure
Construction Site Stormwater Runoff Control

Regulatory Requirement, 40 CFR Part 122.34(b)(4):

You must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre must be included in your program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

Your program must include the development and implementation of, at a minimum:

- A. An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law;
- B. Requirements for construction site operators to implement appropriate erosion and sediment control BMPs;
- C. Requirements for construction site operators to control waste such as discharged building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
- D. Procedures for site plan review which incorporate consideration of potential water quality impacts;
- E. Procedures for receipt and consideration of information submitted by the public; and
- F. Procedures for site inspection and enforcement of control measures.

Guidance

In order to adequately regulate construction activities, the MS4 must have an adopted, comprehensive ordinance. The ordinance must contain requirements to control erosion and sediment (E&S) from construction sites disturbing one acre or more. If the site is less than 1 acre, but is part of a larger development (e.g. subdivision), so that more than 1 acre is disturbed, then the MS4 must regulate this development also. The State Soil and Water Conservation Commission has developed an E&S model ordinance. Under the existing State E&S Act, many MS4s may already have an existing ordinance which requires E&S controls on sites that are equal to or greater than 1.0

acre. Regardless if you are a Local Issuing Authority (LIA) or not, under the Phase II regulations, you must adopt an E&S ordinance.

In addition to requiring the control of E&S at construction sites, you must have the ability to take enforcement for any identified violations. You may also need to include other requirements in the MS4's ordinance. The Federal and State regulations require that your SWMP require construction site operators to control waste materials on the site, such as discarded building materials, sanitary waste, concrete truck washout, and litter. By including requirements for controlling these waste materials in the ordinance, the MS4 will have the authority to inspect for these items and take any necessary enforcement action. If you do not include this requirement in your E&S ordinance, then it must be included in either your litter control ordinance or another ordinance.

Anyone involved in land development, design, review, permitting, construction inspection, or any land-disturbing activity must be certified by the Georgia Soil and Water Conservation Commission. This includes both MS4 employees and the individuals engaged in the land disturbance activities. Depending on what activity you conduct, depends on what level of certification you need. Level 1A requires participants to attend a 1-day course and take an exam for certification. This is relevant for contractors, builders, developers, site superintendents, and monitoring consultants. The course teaches the proper installation, maintenance and inspection of BMPs at construction sites. Level 1B is a 2-day course that trains inspectors on how to properly inspect land disturbance areas for compliance with E&S laws. To be certified, you must attend the course, have 60 days work experience in E&S control and pass an exam. MS4 inspectors will need to receive this certification. Finally, there is a Level II certification for plan reviewers and designers. This requires attendance of a 2-day course, 6 months work experience in E&S control and passing of an exam. Some MS4 employees may require this certification. In addition to the MS4 employees obtaining certification, the LIA will need to ensure everyone engaged in land-disturbance activities within their jurisdiction holds the proper level of certification.

The MS4 needs to develop procedures for ensuring construction sites comply with the ordinance requirements. Most MS4s probably already have procedures in place for ensuring site plan reviews are conducted and for issuing various types of permits (e.g. land disturbance activity (LDA) permits, building permits). However, the MS4 should ensure that employees involved in issuing permits verify that the construction site operator has obtained all necessary permits. If the MS4 has been delegated as a LIA then the operator can obtain the LDA permit from the MS4, for sites greater than 1.0 acre and submit an NOI to be covered under the State's General NPDES Permit for Construction Activity to EPD, with a copy to the MS4. If the MS4 is not a LIA, then the operator should be referred to the State to submit an NOI to be covered under the State's General NPDES Permit for Construction Activity.

Once the operator has received approval of the site plans and obtained coverage under the necessary permits, then construction on the site may begin. The MS4 needs to develop inspection procedures. Ideally, an inspection of each site should be

conducted at various stages of construction. At a minimum, NPDES Permit No. GAG610000 requires inspections to occur following installation of initial BMPs, during active construction, and after final site stabilization. If the MS4 is experiencing areas of rapid growth and there is a shortage of manpower, then frequent inspections of each site may not be impossible. In this case, the MS4 will need to establish priorities for inspecting sites, possibly based on the nature of the construction activity, the site topography, the characteristics of the soils on the site, and/or the water quality of any receiving streams near the site. The MS4 should ensure that each inspection is documented in some manner, such as through completion of an inspection form.

In addition to inspecting the site for compliance with E&S requirements, the MS4 should inspect any structural controls being installed, such as detention/retention ponds. In some municipalities, if construction of development amenities (e.g. roads, utilities) complies with local codes, then the municipality accepts ownership of the amenities. The MS4 may want to consider including residential detention/retention ponds and other structural controls in this agreement. Often, when these structures are privately-owned, whether by a resident, a homeowner's association, or another private entity, they are not adequately maintained. If the MS4 assumes ownership, then they can ensure periodic maintenance of the structure occurs. Another option is that ownership of the structural control is privately retained. The private owner would then enter into an agreement with the MS4 for inspection and maintenance services in exchange for paying a fee to the MS4. The inspection/maintenance agreement should become part of the deed of the affected property, so the agreement is binding on all subsequent landowners.

The regulations require that the MS4 have procedures in place for receiving and considering information from the public. The MS4 should make public reporting of problems as easy as possible, whether it is through publication of a telephone number, use of a web site, etc. Once a citizen complaint is received, if the MS4 is a LIA, then procedures need to be in place to ensure an employee responds to the complaint. If the MS4 is not a LIA, the complaint should be referred to EPD for response. The MS4 may decide that each complaint will be handled through a site visit to verify if a problem exists or the MS4 may respond to each complaint on a case-by-case basis. The MS4 should document any site inspections, findings and requested corrective actions. The MS4 may have to conduct a follow-up to ensure the complaint is resolved and this follow-up action should be documented. For good public relations, it is highly recommended that after the complaint has been resolved, the citizen be notified of the results of the investigation and any corrective actions taken.

During site inspections and complaint investigations, the MS4 may identify violations of ordinance requirements. In this case, the MS4 will need to proceed with enforcement action. The ordinance should provide the MS4 with the authority to take enforcement and specify what enforcement responses are available. Enforcement options could include such things as monetary fines, non-monetary penalties (e.g. implementation of additional BMPs, stop work orders), bonding requirements, and/or permit denials. Based on the severity of the violation and the enforcement options available, the MS4 will need to determine what level of enforcement is appropriate. The MS4 should have written procedures formalized through an Enforcement Response Plan (ERP) to

escalate enforcement as needed. All enforcement actions must be documented. This will help the MS4 in the event the case goes to court and also, during the preparation of the MS4 annual report.

Example #1

A citizen complains that the stream behind his house is red in color. You investigate a construction site upstream from the citizen's house. You document that the construction site operator is not maintaining the BMPs (i.e. the silt fences are laying on the ground, no protection around the storm drain inlet structure). You notify him to immediately correct the violations and you will re-inspect. The next day, you visit the site and the violations have been corrected, so no additional enforcement action is necessary.

Example #2

You note red mud running down the street after a storm event. You investigate and find a construction site operator is clearing land for a small subdivision. The operator has obtained the necessary permits, but failed to install the BMPs included in his site plan. You issue a "stop-work order" until the E&S controls are installed.

We have addressed the need for the following: a comprehensive ordinance; plan review procedures, permitting, inspection and enforcement procedures; complaint response procedures; and construction site operator training. Once you determine the BMPs you will use to put these procedures in place, you need to set a measurable goal for each BMP. EPA has developed a list of parameters the MS4 can use when establishing the measurable goals for the Construction Site Storm Water Runoff Control MCM. We have listed these parameters in Table 4 for your convenience.

Table 4
Measurable Parameters
Construction Site Storm Water Runoff Control

BMP Inspection and Maintenance

- The frequency of inspection and maintenance of BMPs.
- The number of failed storm water BMPs.
- The number of BMPs reported to be in need of repair.
- Whether or not an inventory of inspection and maintenance activities was created and is regularly maintained.

Check Dams

- The number of check dams installed.
- The number of construction sites that have check dams.
- The reduction in runoff quantity.
- The frequency of inspection and maintenance of check dam installations.
- The amount of sediment collected.
- Suspended solids levels at the site outfall.

Chemical Stabilization

- The number of personnel trained to apply chemicals.
- Suspended solids levels at the site outfall.
- The frequency of chemical reapplication.
- The number of construction sites that use chemical stabilization.

Construction Entrances

- The frequency of inspection and maintenance of construction entrances.
- The amount of sediment collected at construction entrances.
- Suspended solids levels at the site outfall.
- Whether or not an ordinance was developed that requires special construction entrances.

Construction Reviewer

- The number of trained inspectors.
- Whether or not an ordinance was developed requiring that sites be inspected.
- The number of inadequate sites/plans reported by inspectors.
- The number of non-compliant permits reported.

Construction Sequencing

- Whether or not an ordinance was developed that requires construction sequencing.
- The number of construction sites that practice sequencing.
- Suspended solids levels at the site outfall.

Contractor Certification and Inspector Training

- The number of certified contractors.
- The number of training and certification programs offered.
- Whether or not an ordinance requiring certification was developed.
- Whether or not an incentives program for certified contractors and inspectors was developed.
- The number of certified inspectors.
- The number of sites inspected.
- Changes in water quality at inspected sites.

Dust Control

- Suspended solids levels at the site outfall or in nearby receiving waters.

Filter Berms

- The number of filter berms installed.
- The number of construction sites with filter berms.
- The frequency of inspections and maintenance activities.

Geotextiles

- The number of geotextile installations at construction sites.
- The number of construction sites that use geotextiles.
- The frequency of inspection and maintenance of geotextile installations.
- Suspended solids levels at the site outfall.

Grass-lined Channels

- The number of grass-lined channels installed.
- The number of construction sites that use grass-lined channels.
- The frequency of inspection and maintenance of grass-lined channels.
- The reduction in runoff quantity.
- Water quality at the site outfall.

Model Ordinances

- Whether or not an ordinance was developed to address construction site runoff control.
- The number of enforcement actions taken.
- The number of stop work orders given.
- The number of bonding requirements set.

Mulching

- The amount of exposed soils protected with mulch.
- The number of construction sites that use mulching.
- Suspended solids levels at the site outfall.

Permanent Diversions

- The number of permanent diversions installed.
- The number of construction sites that use permanent diversions.
- The amount of runoff reduced.
- The frequency of inspection and maintenance of permanent diversions.
- Water quality at the site outfall.

Permanent Seeding

- The amount of seeded area.
- The number of construction sites that use permanent seeding.
- The frequency of inspection and maintenance of seeded areas.
- Suspended solids levels at the site outfall.

Preserving Natural Vegetation

- The amount of naturally vegetated land area preserved.
- The number of construction sites that preserve natural vegetation.
- Whether or not an ordinance was developed that requires that some natural vegetation be preserved at construction sites.
- Water quality at the site outfall.

Riprap

- The number of riprap installations.
- The number of construction sites that use riprap.
- Suspended solids levels at the site outfall.
- The frequency of inspection and maintenance of riprap installations.
- The reduction in runoff velocity.

Sediment Traps

- The number of sediment traps installed.
- The number of construction sites that use sediment traps.
- The amount of sediment collected in sediment traps.
- Suspended solids levels at the site outfall.
- The frequency of inspection and maintenance of sediment traps.

Sediment Basins and Rock Dams

- The number of sediment basins and rock drains installed.
- The number of construction sites that use sediment basins and rock dams.
- The amount of sediment collected in sediment basins.
- Suspended solids levels at the site outfall.
- The frequency of inspection and maintenance of sediment basins and rock drains.

Silt Fence

- The amount of silt fence installed.
- The number of construction sites that use silt fences.
- The amount of sediment collected by silt fences.
- The frequency of inspection and maintenance of silt fences.
- Suspended solids levels at the site outfall.

Sodding

- The amount of disturbed land protected by sod installations.
- The number of construction sites that use sodding.
- The frequency of inspection and maintenance of sod installations.
- Suspended solids levels at the site outfall.

Spill Prevention and Control Plan

- The number of reported spills.
- Whether or not an ordinance for storage of high-risk chemicals was developed.
- The number of personnel trained in spill response.

Storm Drain Inlet Protection

- The number of storm drain inlets protected.
- The number of construction sites that use storm drain inlet protection.
- The amount of sediment collected.
- Suspended solids levels at the site outfall.
- The frequency of inspection and maintenance of storm drain inlets.

Temporary Diversion Dikes

- The number of temporary diversion dikes installed.
- The number of construction sites that use temporary diversion dikes.
- The reduction in runoff quality at the site outfall.
- Suspended solids levels at the site outfall.
- The amount of sediment collected by temporary diversion dikes outfall.

Temporary Slope Drain

- The number of temporary slope drains installed.
- The number of construction sites that have temporary slope drains.
- Suspended solids levels at the site outfall.
- The frequency of inspection and maintenance of temporary slope drains.

Temporary Stream Crossings

- The number of temporary stream crossings installed.
- The frequency of inspection and maintenance of temporary stream crossings.
- Suspended solids levels at the site.

Vegetated Buffer

- The number of vegetated buffers installed.
- The number of construction sites with vegetated buffers.
- Changes in water quality of runoff leaving buffer areas.
- The reduction in runoff quantity.
- The frequency of inspection and maintenance of vegetated buffers.

Vehicle Maintenance and Washing Areas

- Water quality at the site outfall.
- Whether or not construction vehicles are regularly inspected.
- The number of vehicle wash areas on-site.
- The number of construction sites with designated vehicle maintenance and washing areas.

Chapter Nine
Fifth Minimum Control Measure
Post-Construction Storm Water Management
in New Development and Redevelopment

Regulatory Requirement, 40 CFR Part 122.34(b)(5):

You must develop, implement, and enforce a program to address storm water runoff into the MS4 from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. Your program must ensure that controls are in place that would prevent or minimize water quality impacts.

You must:

- A. Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for your community;
- B. Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law; and
- C. Ensure adequate long-term operation and maintenance of BMPs.

Guidance

The purpose of post-construction storm water management is to minimize water quality impacts and attempt to maintain pre-development conditions. In order to do this, the MS4 should consider post-construction conditions even before construction begins on the site. By considering the impacts at the beginning of a project, the MS4 has greater opportunity to include the practices and/or control structures needed to protect water quality. For example, the MS4 may use this opportunity to require that a temporary structural control, installed during the construction phase, be designed so it can be retrofitted for permanent use in the post-construction phase. As another example, the site design can include more pervious areas (e.g. areas with vegetative cover), which will reduce runoff and allow for groundwater recharge.

The first step should be to evaluate an existing ordinance or develop a new ordinance, if needed. If an ordinance does exist, you want to ensure that runoff is required to be controlled after construction is completed. You also want to make sure that it addresses both new developments and redevelopment of sites. If an existing ordinance does not address these issues, or an ordinance does not exist, then the MS4 will need to create a comprehensive ordinance. An example ordinance can be found at EPA's website: www.epa.gov/owow/nps/ordinance. Also, the District has developed a post-construction ordinance. You might include such things in the ordinance as maintaining specified buffers, minimizing impervious surfaces, and minimizing the

disturbance of soils and vegetation. You might also want to require structural BMPs under certain conditions.

Green Infrastructure/Low Impact Development (GI/LID) practices are quickly becoming a standard approach to site design. These practices provide for the infiltration, reuse, and evapotranspiration of stormwater. Many MS4s already have ordinances in place that regulate various aspects of governing a municipality. However, some of these ordinances actually prohibit or impede the use of GI/LID practices. For example, some ordinances require a specific number of parking spaces per square foot of building, when this area might be excessive. Other ordinances require that streets be a certain width for fire truck traffic, which results in more impervious surface than necessary. One of your first steps is to evaluate the existing ordinances to ensure they do not prohibit or impede the use of GI/LID practices. Several resources are available to conduct this evaluation. EPA has developed a “Water Quality Scorecard” (www.epa.gov). In addition, the Center for Watershed Protection (www.cwp.org) has created a “Code and Ordinance Worksheet” which is easy to use and to understand.

In addition to GI/LID practices, there are actual GI/LID structures. These structures increase stormwater infiltration, reuse or evapotranspiration. For example, some of these structures include bioswales, pervious pavement, rain gardens, cisterns, and green roofs. It is important that the MS4 maintains an inventory of these structures and ensures any new structures identified through the plan review process are added to the inventory.

Besides GI/LID structures, there are post-construction structural BMPs such as detention ponds, grassed swales, and infiltration basins. It is important that the MS4 regulate the design, installation and construction of these structures. The Atlanta Regional Commission (ARC), in conjunction with several metro communities, developed the GSMM. The GSMM contains a set of performance standards that are minimum requirements for new development or redevelopment sites. NPDES Permit No. GAG610000 incorporates these performance standards and requires the implementation of either the GSMM or an equivalent local design manual. A supplemental manual to the GSMM, called the Coastal Stormwater Supplement (CSS) has also been completed. If you are located in the 11-county coastal management program service area (Bryan, Brantley, Camden, Charlton, Chatham, Effingham, Glynn, Liberty, Long, McIntosh, and Wayne), the Permit requires that you must also adopt the CSS. The MS4’s ordinance should reference adoption of the GSMM or a local design manual, and if necessary, the CSS. Once the MS4 completes the plan review and accepts the structural control design and construction of the control structure begins, the MS4 should conduct periodic inspections to ensure the structure is being constructed as proposed. The MS4 should ensure these inspections are documented and documentation is retained.

The MS4 needs to determine who will own the structure upon completion. If the MS4 will take ownership, then procedures need to be in place to ensure the structure is periodically inspected and maintained. If the structure will be privately owned (e.g. residential, commercial), then the MS4 should have the authority through an ordinance to require the structure to be maintained, require the owner to take corrective action, or

take enforcement action against the owner for failure to maintain the structure. One method of ensuring privately-owned structural controls will be maintained is to require the private owner to enter into a “maintenance agreement” with the MS4. The submittal and execution of the agreement can occur during the submittal of the E&S control/construction site plan. The executed agreement becomes part of the property deed and is binding for subsequent landowners. Once ownership is established, the MS4 should ensure the structure is added to an inventory. This inventory should be updated continually as structures are added.

You can also use non-structural BMPs to control post-construction runoff. Non-structural BMPs include such things as policies, procedures, and practices. For example, the MS4 may direct growth towards less sensitive areas of its jurisdiction (e.g. away from wetland areas) or increase open spaces (e.g. through green space acquisition). A non-structural BMP can include educational programs for various groups, such as developers and the public, on project designs that minimize water quality impacts. The MS4 can also require a reduction in impervious area in order to allow rain filtration and recharge of the groundwater supply.

Example #1

There has been a significant amount of development occurring in the southern part of your jurisdiction. This has resulted in an increase in impervious area. You have determined that you will require the installation of grassed swales in place of curbs and gutters in new developments and re-developments. In order to do this, you modify the ordinance to require future developments to implement practices that reduce the amount of impervious surface. In the future, you evaluate a reduction in runoff quantity to document the effectiveness of the BMP.

Example #2

There are numerous older existing detention ponds throughout your jurisdiction. You have adopted the GSMM, which requires that stormwater be treated to remove 80% of the average annual post-development total suspended solids (TSS). The detention pond at the MS4’s public works facility was designed 20 years ago, prior to the adoption of the GSMM performance standards. There has been a noticeable impact of sediment on the receiving stream for this pond. You determine the pond must be retrofitted to bring it to the level where it can achieve the 80% TSS removal performance standard.

Once you have completed an inventory of the post-construction structures, you must implement a long-term operation and maintenance program. At a minimum, you must inspect and maintain those structures owned by the MS4. NPDES Permit No. GAG610000 provides discretion on how the MS4 will address privately-owned ponds. For publicly-owned ponds and those privately-owned ponds for which the MS4 takes responsibility, inspection of the structures must be performed so that 100% of the ponds are inspected within a 5-year period. Maintenance should be performed as needed.

Once you have determined which BMPs to use, either structural or non-structural, then you need to set a measurable goal for each BMP. EPA has developed a list of parameters the MS4 can use when establishing the measurable goals for the Post-Construction Storm Water Management in New Development and Redevelopment MCM. We have listed these parameters in Table 5 for your convenience.

Table 5
Measurable Parameters
Post-Construction Stormwater Management
In New Development and Redevelopment

Alternative Turnarounds

- The reduction in impervious cover.
- The number of turnarounds modified.
- Whether or not development codes were changed to allow alternative turnarounds.
- The reduction in runoff quantity.
- Changes in the physical characteristics of streams downstream from modified areas.

Alternative Pavers

- Whether or not development codes were changed to allow for alternative pavers.
- The amount of new alternative paver installations added or replaced.
- The number of new development sites that use alternative pavers.
- The reduction in runoff quantity.
- Changes in the physical characteristics of streams downstream from areas with alternative paver installations.

Bioretention

- The reduction in impervious cover.
- The reduction in runoff quantity.
- Changes in runoff water quality (nutrients, sediments, metals, organics, etc.)
- The number of new bioretention cells installed (both commercial and residential).
- The number of acres that are drained by bioretention cells.

BMP Inspection and Maintenance

- The frequency of inspection and maintenance activities.
- The number of problems that were identified and remedied.
- The change in the proportion of BMPs that are well-maintained as a result of inspection and maintenance.
- Whether or not an inventory of BMPs requiring maintenance was completed and is regularly updated.
- Changes in water quality of effluent from BMPs.

Buffer Zones

- Whether or not development codes were changed to require buffer zones.

- The acreage of land conserved as buffers.
- The acreage of land converted to buffers.
- Changes in water quality of runoff leaving buffer areas.
- Changes in the physical characteristics of streams downstream from areas with buffer zones.
- The frequency of inspections and maintenance activities in buffer zones.
- The acreage that drains to buffer zones.

Catch Basin

- The number of catch basins retrofitted with filtering devices.
- The quantity of sediment removed from catch basins.

Conservation Easements

- The acreage of land conserved under easements.
- Whether or not an inventory of lands that could be conserved with conservation easements was completed.

Dry Extended Detention Ponds

- The reduction in runoff quantity.
- Changes in water quality of effluent from the dry pond outlet.
- The number of new dry ponds installed.
- The acreage of land drained by dry ponds.

Eliminating Curbs and Gutters

- Whether or not development codes were changed.
- The reduction in runoff quantity.
- The number of new developments without curbs and gutters.
- The number of curb cuts made in existing developments.
- The number of miles of gutterless streets.

Grassed Swales

- The number of new grassed swales installed.
- The miles of streets with grassed swales.
- The reduction in runoff quantity.
- The reduction in runoff velocity.
- Change in water quality of runoff from areas with grassed swales.
- The number of acres drained by grassed swales.

Grassed Filter Strip

- The number of new grassed filter strips installed.

- The miles of streets with grassed filter strips.
- The reduction in runoff quantity.
- The reduction in runoff velocity,
- Changes in water quality of runoff from areas with grassed filter strips.
- The number of acres drained by grassed filter strips.

Green Parking

- Whether or not development codes were changed to allow green parking.
- The number of new green parking lots installed.
- The reduction in runoff quantity.
- The number of impervious acres served by green parking lots.
- The number of impervious lots converted to green lots.

In-line Storage

- The reduction in peak flow of runoff.
- The number of basins retrofitted with flow regulators.
- The acreage drained by in-line storage systems.

Infiltration Basin

- The reduction in runoff quantity.
- Changes in water quality.
- The number of new infiltration basins installed.
- The acreage drained by infiltration basins.

Infiltration Trench

- The reduction in runoff quantity.
- Changes in water quality.
- The number of new infiltration trenches installed.
- The acreage drained by infiltration trenches.

Infrastructure Planning

- Whether or not development codes were modified.
- The number of new developments using storm water BMPs.
- The reduction in impervious surface area and infrastructure.

Manufactured Products for Storm Water Inlets

- Whether or not an inventory of areas where installation of manufactured products would be appropriate was completed.
- Whether or not a review was conducted to identify which products would be best for each inlet.

- The number of manufactured products installed in storm water inlets.
- Changes in water quality.

Narrower Residential Streets

- Whether or not development codes were modified.
- The reduction in impervious surface area.
- The number of new developments that use narrower streets.
- Changes in water quality.

On-Lot Treatment

- The reduction in runoff quantity.
- The reduction in runoff peak flow.
- The number of lots that use on-lot treatment.
- The acreage of impervious surfaces that drain to on-lot treatment BMPs.
- The number of manufactured products sold to store runoff on-site (i.e. rain barrels).
- Changes in water quality downstream from areas that use on-lot treatment.

Open Space Design

- Whether or not development codes were modified to accommodate open space developments.
- The number of new developments that use open space design principles.
- The number of acres of open space preserved with open space design.

Ordinances for Post-Construction Runoff

- Whether or not an ordinance was developed to address post-construction runoff.
- The projected amount of impervious cover reduced under the new ordinance.
- The number of enforcement actions that occur as a result of the new ordinance.

Porous Pavement

- Whether or not development codes were modified to allow for porous pavement.
- The amount of new porous pavement added or replaced.
- The number of new development sites that use porous pavement.
- The reduction in runoff quantity.
- Changes in the physical characteristics of streams downstream from areas with porous pavement installations.

Sand and Organic Filters

- Changes in water quality.
- The reduction in runoff quantity.

- The number of new sand and organic filters installed.
- The acreage of impervious surface that drains to sand and organic filters.

Storm Water Wetland

- Changes in water quality.
- The reduction in runoff quantity.
- The number of storm water wetlands created.
- The acreage of impervious surface that drains to storm water wetlands.

Urban Forestry

- Whether or not development codes were modified to promote urban forestry.
- Whether or not an ordinance was developed to promote urban forestry.
- The number of trees planted as a result of urban forestry initiatives.
- The acreage of treed land.
- The reduction in runoff quantity.
- Changes in water quality.
- The acreage of forest habitat created.
- Aesthetic and shade benefits.

Wet Ponds

- Changes in water quality.
- The reduction in runoff quantity.
- The number of wet ponds installed.
- The acreage of impervious surface that drains to wet ponds.

Zoning

- Whether or not development codes were modified.
- The amount of open space protected with new zoning codes.
- The projected number of new storm water treatment areas expected under the new zoning codes.
- The projected number of upgrades to existing storm water facilities expected as a result of changes in expected development density.

Chapter Ten
Sixth Minimum Control Measure
Pollution Prevention/Good Housekeeping for Municipal Operations

Regulatory Requirement, 40 CFR Part 122.34(b)(6):

You must develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. Using training materials that are available from EPA and other organizations as guidance, you must as part of this program include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

Guidance:

NPDES Permit No. GAG610000 requires you to either update an existing inventory or develop a new inventory and map of the MS4 structures. This includes, at a minimum, catch basins, ditches, detention/retention ponds, and storm drain lines. You may determine it is beneficial to inventory additional structures, such as inlets, headwalls, junction boxes, yard drains, etc. The purpose of the inventory and map is to provide for the proper operation and maintenance of the storm sewer system.

The Permit also requires the periodic inspection of the identified structures. It is recommended that as you are developing the inventory and map, you inspect the structure. The entire inventoried system (100%) must be inspected within the 5-year cycle of the permit. Some permittees inspect 20% of the structures annually. Some divide their jurisdiction into fifths and inspect all of the structures within an area each year. Some permittees divide their jurisdictional area into quadrants and inspect a fourth of the structures annually. You are allowed to determine how the inspection program will be implemented as long as the entire system is inspected during the 5-year period. Maintenance is to be performed as needed based on the results of the inspections.

During the inspection and maintenance activities, you must make sure that you document each activity. On each annual report, you will be required to provide the number of structures inspected, the number maintained, and provide documentation that you performed these activities.

Another requirement of the NPDES Permit is to have a program to conduct street and parking lot cleaning. This can be done either mechanically through the use of a street sweeper or through another litter removal method. The purpose of street cleaning is to remove debris before it gets into the MS4 or subsequently washes into the stream. If you choose to use a street sweeper, then your BMP must include specifics, such as the miles of street to be swept annually, the route to be swept, or similar. You can also use a less sophisticated method of street cleaning. You may have municipal employees manually sweep the streets that are most prone to littering or pick up litter

prior to mowing. You may use community service workers to pick up debris. Regardless if you use a manual method or street sweeper, you must document all activities (e.g. miles cleaned, tons of litter removed annually) and provide documentation in each annual report.

One of the most important aspects of pollution prevention and good housekeeping is the education of municipal employees. This is important because once they become aware of the potential water quality impacts the municipal facilities and their actions may cause, they can take steps to prevent these impacts. You must conduct a training program for municipal employees. The regulations state that the purpose of the training is to prevent and reduce pollution from municipal activities. They list such things as park and open space maintenance, fleet and building maintenance, new construction and storm water system maintenance. You should tailor your program based on the daily operations undertaken by your employees. If you have a fleet maintenance facility, your training program might focus on the proper disposal of used oil and spill response. If your municipality has employees responsible for landscaping, then your training program might focus on the use of fertilizers and herbicides, the need to pick up trash prior to mowing, and the proper disposal of yard waste. You can determine the frequency at which employees will be trained, but it is recommended that you hold at least one training course annually. It is also recommended that you cover different topics each year so employees are better informed about different aspects of pollution prevention. Finally, you must provide documentation of training in each annual report. This can consist of employee sign-in sheets, pictures of the training event, or some other method of documentation.

During the maintenance of the MS4, you will remove debris from catch basins and other structures. You will also collect litter and debris during street sweeping and litter removal activities. You must have procedures in place for disposal of these waste materials. For example, if a municipal employee manually removes debris from a catch basin, it is not acceptable to pile that debris on the road by the curb inlet. The next time it rains, the debris will wash right back into the catch basin. Your procedures should cover the removal of the debris from the site and proper disposal in a landfill. Also, you must have a way to track the amount of debris disposed of or show the number of structures or miles of streets and ditches cleaned.

You are required to ensure proposed flood management structures are assessed for water quality impacts during the design phase. Under the Post-Construction minimum control measure, you must adopt the GSMM or a local design manual. During the plan review of proposed detention/retention ponds and other similar structures, you should ensure the project design applies the performance standards required by the GSMM or your local design manual. These performance standards have been incorporated into the NPDES Permit, so it is extremely important that they be incorporated during the plan review stage. In each annual report, you will be required to report on the number of plans reviewed during the year which included flood management projects that were assessed for water quality impacts. Therefore, you must ensure you have procedures in place to track the number of plans reviewed that meet this criteria.

Many of the existing flood management structures (e.g. detention or retention ponds) were constructed prior to the development of water quality performance standards (i.e. GSMM or local design manual). The purpose of the structures was to retain or slow down the flow of the water, not provide any treatment of stormwater. It is possible to evaluate the design of these existing structures and retrofit the structure to provide an increased level of water quality treatment. The NPDES Permit requires you to include a BMP that addresses the retrofitting of existing structures. You must develop a program for assessing existing publicly-owned structures for a potential retrofit. The program should specify the possible retrofits to be made, the number of structures to be evaluated annually, and the schedule for installing any retrofits. You will be required to report what activities were performed during the reporting period in each annual report.

You must develop an operation and maintenance program for municipal operations that have a potential to cause pollution. The first step is to inventory all municipal operations. You will need to consider both actual facilities and the activities performed there and also, practices throughout the MS4's jurisdiction. Some of the facilities may include, but are not limited to:

- Fleet or maintenance shops;
- Maintenance and storage yards;
- Municipal airports;
- Wastewater treatment facilities;
- Drinking water treatment facilities;
- Vehicle washing;
- Waste transfer stations; and
- Parks and public areas.

For municipal facilities, you need to evaluate all operations that occur at that location. For example, you need to determine if chemicals, such as fertilizers, paints, solvents or automotive products are properly stored and inventoried. When reviewing proper storage practices, the MS4 should ensure procedures exist to store chemicals in areas not exposed to precipitation or storm water. Procedures should also be in place to ensure containers are sound, or if they have the potential to leak, are stored in a retaining (diked) area. The MS4 should take steps to minimize the amounts of chemical used. Finally, procedures should be in place to properly dispose of spent chemicals and containers.

You will also need to review maintenance practices at these facilities. Use of herbicides, pesticides, and fertilizers on public lands (e.g. parks, roadway shoulders) should be minimized and properly controlled. Washing of MS4 vehicles (e.g. police cars, municipal vehicles) should be performed in a manner which limits the amount of runoff, such as through the use of a commercial car wash with an grit/oil/water separator instead of in a facility parking lot. In short, the MS4 will need to look at every aspect of operating the municipality and determine if procedures need to be developed or revised to improve pollution prevention. Another aspect of pollution prevention is having spill response procedures in place. These procedures should detail who will

respond to a spill, how the spill will be contained or diverted, and steps that will be taken to clean up the spill. All employees who have the potential to cause or encounter a spill should be trained in the proper procedures, even if they are just made aware of whom to contact in the event of a spill.

Example #1

There have been numerous complaints of algal blooms during warm weather on the lake located in a park owned by the MS4. Because algal blooms are caused by increased nutrients, you investigate and find that MS4 grounds crews are applying large quantities of fertilizer to the park grounds. You develop a workshop to train MS4 employees to limit the amount of fertilizer used and to provide information about the use of native vegetation.

Example #2

A large amount of debris and sediment has been noted in an urban stream. The MS4 has a street sweeping program and catch basins are periodically cleaned. Upon investigation, it is determined that the MS4 crews have only been removing debris from grate openings, and not fully cleaning the catch basins. You develop a program for periodic inspection and cleaning of the catch basins, including educating MS4 employees on proper cleaning of the storm sewer system and disposal of debris.

Once you have selected the BMPs to be implemented, either from EPA's menu of BMPs or through creating your own, you must establish measurable goals. EPA has developed a list of parameters the MS4 can use when establishing the measurable goals for the Pollution Prevention/ Good Housekeeping for Municipal Operations MCM. We have listed these parameters in Table 6 for your convenience.

Table 6
Measurable Parameters
Pollution Prevention/Good Housekeeping for Municipal Operations

Automobile Maintenance

- The number of employees trained in preventing pollution from automobile maintenance activities.
- The number of spills reported.
- The number of educational materials distributed to municipal employees.

Hazardous Materials/Chemical Storage

- The number of regularly inspected storage facilities.
- The number of employees trained in proper hazardous material/chemical storage and maintenance.
- The total number of storage facilities equipped to store hazardous materials/chemicals.

Illegal Dumping Control

- Whether or not areas where illegal dumping is common were identified.
- The number of “no dumping” signs posted.
- The number of reports of illegal dumping received.
- The number of dumps sites cleaned up.
- The number of sites improved to eliminate them as target dumping spots.
- The number of enforcement actions pertaining to illegal dumping.
- Whether or not a partnership with the community was established to promote reporting and to educate citizens.

Parking Lot and Street Cleaning

- Whether or not roads and parking lots were inventoried and prioritized for cleaning.
- The number of scheduled road cleanings.
- The pounds of debris collected from street sweeping.
- The miles of road swept annually.

Pet Waste Collection

- The number of dog parks.
- The number of signs posted stating regulations.
- The number of educational materials distributed.
- The number of “pooper-scooper” stations installed.

Road Salt Application and Storage

- The number of storage facilities included in a regular inspection and maintenance program.
- The number of storage facilities repaired.
- The number of employees trained in road salt application.
- The quantity of salt applied to roadways.
- The quantity of alternative products used.

Spill Response and Prevention

- Whether or not an inventory of municipal facilities at risk for causing pollution was created.
- The number of leak detection devices at municipal facilities.
- The number of preventative maintenance procedures performed on tanks, valves, pumps, pipes, and other equipment.
- Whether or not a spill response plan was developed for municipal facilities.
- The number of personnel trained on spill response.
- The number of regularly inspected municipal facilities.
- The number of educational materials distributed to municipal employees.

Storm Drain System Inspection and Maintenance

- Whether or not an inventory and map of MS4 structures was completed.
- The number of structures inspected annually.
- The number of structures maintained during the year.
- The number of catch basins cleaned during the year.
- The amount of trash, sediment, and other pollutants removed during cleaning.

Used Oil Recycling

- The number of gallons of used oil collected from municipal operations.
- The number of recycling facilities that collect oil from municipal operations.
- The number of educational materials distributed to municipal employees.

Vehicle Washing

- The number of educational materials distributed to municipal employees.
- The number of designated municipal vehicle washing areas.

Employee Training

- The number of employee training events held during the year.
- The number of employees trained in pollution prevention.
- The number of employees receiving some type of certification (e.g. E&S, pesticide application).

New Flood Management Projects

- The number of plans reviewed for new flood management projects where performance standards were considered.

Existing Flood Management Projects

- The number of structures evaluated during the year for potential retrofitting for water quality improvement.
- The number of retrofits constructed.

Chapter Eleven **Data Management and Reporting**

Although this guidance document focused mainly on the development of the stormwater management program (SWMP), there is one more item that needs to be addressed. The General NPDES Permit will require submittal of a report which summarizes the status of the program on an annual basis (Annual Report). The Annual Report will require the MS4 to provide information on the steps taken each year to implement the SWMP. The report will require the MS4 to report such things as the following:

- What BMPs were implemented during the reporting year;
- The status of BMPs already in place;
- Revisions to any BMPs (you tried a BMP, found it to be ineffective, and implemented a new BMP);
- Stormwater activities performed during the reporting year, including the results of any information collected (e.g. monitoring results, completed inspections, enforcement actions); and
- Planned activities for the next reporting year.

For some of the items you will be required to report on, narrative text may suffice. For example, during the year in which a BMP is implemented, you will probably be reporting the steps taken to get the BMP going and not be able to report actual data or results of activities performed. However, in subsequent years, after a BMP has been implemented, you will be expected to provide more specific information. As explained in numerous places throughout this guidance document, you will have to provide actual documentation to demonstrate what activities were performed during the reporting period.

Example #1

As part of the NOI/SWMP development, you determine a component of your Public Education and Outreach minimum control measure will be stenciling of storm drains. In the first annual report, you will probably only be able to discuss details on the storm drain stenciling program implementation. You explain that during the first year, you organized certain groups to perform the task, obtained the necessary materials, and prioritized the drains to be stenciled.

Example #2

This is the second year that you are required to submit an Annual Report. You implemented a storm drain stenciling program during the first year of your SWMP. In this Annual Report, you discuss that during the reporting year, Boy Scout Troop #36578 stenciled 25 drains in the Sleepy Hollow Park area, Kiwanis Club stenciled 50 drains in the Queen Mary River basin, and Blue County Clean & Beautiful stenciled 200 drains in the historic downtown area of Smalltown for a total of 275 drains stenciled this year.

In order to provide specific information on the tasks performed during a reporting year by the MS4 (e.g. number of detention basins inspected, number of brochures distributed, number of outfalls screened for illicit connections), the MS4 will need to develop tracking procedures. The first step will be to ensure all tasks are documented. If an inspection is performed, then an inspection form should be completed. If enforcement is taken, then documentation of the enforcement action (e.g. letter, form) should be retained. For every item reported to EPD as having been completed, there should be some type of documentation to support this statement. If you state in the Annual Report that you inspected 10 industries, but are unable to provide documentation to EPD upon request, then it must be assumed that the inspections were not performed. Therefore, it is extremely important to document each action.

Once you have developed procedures for ensuring tasks are documented, then you need to determine how the information will be compiled and the status tracked. Some smaller communities may be able to do this using hard copies and manually tabulating results. Larger communities may find they need to develop some type of database. In some cases, the MS4 will only have to track the number of items completed (e.g. number of miles of streets swept, pounds of debris removed from stream, number of storm drains stenciled). In other cases, the MS4 may need to track when something is due (e.g. inspections of the Old North Church detention basin are due one time in a 5-year period), when the task was performed (e.g. the Old North Church detention basin was inspected in October 2012), or additional information (e.g. the Old North Church detention basin outlet structure was repaired on November 15, 2012).

In summary, the MS4 will need to submit an Annual Report to EPD which provides the implementation status of the SWMP. The MS4 should ensure all tasks performed are documented in some manner. The MS4 will need to tailor their data management program to their own needs and ensure it allows the MS4 to compile and report all the necessary information to EPD in the Annual Report.

Chapter Twelve **Enforcement Response Plan (ERP)**

The permittee is required to develop an Enforcement Response Plan (ERP) in order to outline in a step-by-step manner, the procedures the MS4 staff will follow to identify, document, and take enforcement for a violation of a local ordinance. The MS4 staff must collect data and document violations in a way that will ensure the evidence is admissible in the event of a legal proceeding.

The ERP will describe violations and the range of appropriate enforcement actions, which should result in timely and consistent enforcement. The ERP will allow the MS4 to show that enforcement was escalated in accordance with approved procedures. This should reduce any claims by the violator that the enforcement was arbitrary or unreasonable. The document will list the personnel responsible for each level of enforcement, whether it is field personnel or the City/County Manager's office. The lower the level of staff allowed to take enforcement, the more timely the response.

It is recommended that the ERP be divided into separate sections for each of the SWMP components (IDDE, Construction, Post-Construction). If the permittee is inventorying and inspecting commercial facilities and/or industrial facilities, then the ERP should include section(s) for these types of facilities. Each section will include information relevant to that component, such as the ordinance or ordinance citations, possible violations, enforcement mechanisms to be used, etc. The permittee may use another format, as long as all the information required by the permit is included and the procedures are clearly shown. The ERP should be included as an appendix to the SWMP.

Ordinances

The permittee must evaluate local ordinances to ensure the MS4 has adequate legal authority to take enforcement. This includes identifying the authority to use a range of enforcement actions. Also, the ordinance(s) must provide the permittee with the right of entry and inspection.

The ERP will need to include the names of the relevant ordinances and section citations from those ordinances which provide the legal authority to the MS4 to engage in enforcement actions.

Identify Potential Violations

In developing the ERP, the permittee must determine the possible instances of noncompliance for each SWMP component (i.e. IDDE, Construction, Post-Construction). For example, the scenarios for IDDE noncompliance might include an intermittent discharge and an illegal connection to the MS4.

Enforcement Mechanisms

Once the possible instances of noncompliance have been identified, the permittee must identify appropriate enforcement responses for each violation. This should include several options to be used, for both the initial enforcement action and follow-up actions. This will allow the MS4 to address the severity of the violation. For example, a Notice of Violation (NOV) might be appropriate for the failure to install or maintain sediment barriers at a construction site, but a more severe response, such as a stop work order would be warranted for the failure to install the sediment barriers and sediment leaves the site. Also, various enforcement options will allow the permittee to “escalate” enforcement, if necessary (i.e. the violator doesn’t resolve the noncompliance, the violator has several types of violations at once).

There are several types of enforcement actions. The permittee may not have the authority to use all of these, or may have other actions at their disposal. These are just suggested types of enforcement responses:

- Verbal Warnings – these can consist of phone calls or face-to-face discussions. The permittee should specify the nature of the violation and the required corrective action during the conversation.
- Notice of Violation (NOV) – the NOV can consist of a form or a letter that has been hand-delivered or sent certified mail. The authority to issue an NOV should be delegated to an inspector or field personnel, so the enforcement process will be expedited. The benefit of using the NOV is that it allows the MS4 to document the violation, it is inexpensive, and can be issued promptly. Copies of the NOV should be retained by the MS4 for potential escalating enforcement.
- Citations (with or without fines) – these can include civil or administrative actions, including penalties. In addition to a penalty, the document may specify the corrective action needed and the time frame for completing the action. Most MS4s have the ability to fine up to \$1000 per day for civil penalties and fine up to \$1000 per day and 60 days imprisonment for a criminal violation.
- Stop Work Orders – these enforcement actions apply to violations identified at construction sites. The action requires the cessation of construction activities, except those related to cleaning up the site, abating a discharge, or installing control measures on the site.
- Withholding Plan Approval or Other Authorizations – this can include withholding a certificate of occupancy, suspending or revoking a permit, or other type of authorization.

- Other Measures – the MS4 may have the authority through an ordinance to take another type of enforcement action. For example, recovery of costs by an MS4 associated with corrective actions performed on behalf of a violator.

The permittee must ensure that they address all violations at the time of an inspection. If the permittee only addresses the most serious or significant violation, then minor problems will be overlooked. Failure to ensure these minor violations are corrected can result in the severity increasing over time. The permittee must ensure each enforcement action is documented. Documentation may be necessary in the event of escalation of enforcement to a judicial level.

Appropriate Responses

After the permittee has determined possible types of enforcement, then factors must be considered in determining what the appropriate enforcement response is. When making this determination, the permittee should consider the following:

- Magnitude of the problem;
- Duration of the problem;
- Effect on the waters of the State;
- Effect on the MS4;
- Compliance history; and
- Good faith of the violator.

Magnitude - The permittee may determine that a phone call or NOV are appropriate for an isolated instance of noncompliance. However, more severe violations must be met with more severe enforcement actions.

Duration - If violations persist over a long period of time, then enforcement options must be available to provide for escalating enforcement.

Effects on State waters - If a violation results in environmental harm to the receiving waters, then the permittee must be able to respond with a severe action.

Effect on the MS4 - If a violator damages the MS4, or causes the permittee additional costs (e.g. cost to clean out the MS4, cost to trace the source of an illicit discharge), the permittee should have an enforcement action that allows for the recovery of these costs.

Compliance history - If a violator has taken a casual approach to complying with ordinance requirements in the past, this may indicate future violations will occur. This

history should be taken into account when determining whether to take an informal or severe enforcement action.

Good faith - The permittee may determine that the violator has shown honest intent to correct an instance of noncompliance. In this case, the severity of the enforcement response should be reduced.

The ERP must describe when each of the enforcement mechanisms will be used and what factors the MS4 will consider when determining the level of response to take. Also, the ERP must explain how the escalation of enforcement will progress in a step-by-step manner.

Time Frames

Once the permittee has determined possible scenarios of noncompliance, possible enforcement responses and when to use each enforcement type, then the next step is to set time frames. Enforcement must be timely to be effective. This means that the permittee must detect the violation and respond promptly. Most ordinances set time frames for issuance of an enforcement action, such as 5 days to issue an NOV. However, more formal enforcement actions will take longer. The ERP must include time frames for each step, including the initial enforcement response by the MS4, the time allowed to the violator to correct the problem, follow-up re-inspection, escalation of enforcement if necessary, etc.

Tracking

The MS4 will need to track dates, including dates of inspection, dates for issuance of enforcement actions, and deadline date for a violator returning to compliance. The MS4 should use these dates to escalate enforcement, if necessary. The MS4 should not continue to issue multiple NOVs, but should escalate enforcement in order to resolve the violation.

The ERP will need to describe how the MS4 will track data related to enforcement. The data may be tracked manually or electronically. The information should include such things as:

- Name of owner/operator of the facility and/or location or address;
- Type of site (e.g. illicit discharge, construction, industrial);
- Description of noncompliance;
- Description of enforcement mechanisms/actions used;
- Time frames for each step; and

- Date of violation resolution.

The ERP will also need to explain how the MS4 will document each inspection and enforcement action taken. In the event the complaint must be referred to another agency or department for handling, the ERP should explain how this referral will be documented. For example, if the illicit discharge is the result of a leaking sanitary sewer line and the stormwater department refers the problem to the sewer department for resolution, then this referral must be documented. Because all of this information must be provided with the annual report, the MS4 will need to explain in the ERP how the information will be tracked, compiled, and submitted with the annual report.

Chapter Thirteen **Impaired Waters Plans**

The NPDES Permit requires that the MS4 address impaired waters within their jurisdiction. All MS4s have to complete the same tasks, including identifying the impaired waters and pollutant(s) of concern (POC), mapping the outfalls discharging to these impaired waters, and choosing and implementing BMPs to address the POCs. However, if the population of your MS4 is greater than 10,000, then you must also develop a monitoring plan. This plan is called the “Monitoring and Implementation Plan”. If your population is less than 10,000, then you do not have to conduct monitoring and your plan is called an “Impaired Waters Plan”. The “Monitoring and Implementation Plan” or the “Impaired Waters Plan” should be included as an appendix to the SWMP.

Impaired Waters Plan (population <10,000)

Step 1: The first step is to identify the impaired waters within your jurisdiction. This can be done by consulting the latest approved 305(b)/303(d) list on EPD’s website. This list is updated every two years (in even numbered years), so ensure you are using the correct list. The list of impaired waters and pollutant(s) of concern (i.e. the pollutant(s) causing the water impairment) should be included in the plan. Every year that a new 305(b)/303(d) list is approved, the MS4 must review the list and address any newly listed impaired waters.

Step 2: The plan must include a map showing each of the impaired waters. In addition, you are required to identify any MS4 outfalls that discharge to these waters. These outfalls must be shown on the map. The permittee may include all of the impaired streams on one map. However, the permittee may find that if numerous streams need to be mapped, the map may be too complex. In that case, a separate map may be prepared for each impaired water. If you need time to identify the relevant outfalls, then the plan must include a schedule with a final completion date for identifying the outfalls.

Step 3: The next step is to select BMPs. The purpose of the BMPs is to control or reduce the POC(s). The BMPs do not usually consist of structures, but rather practices and activities performed by the permittee. For example, if the POC has been identified as fecal coliform bacteria, then the BMPs might include taking steps to reduce sewage overflows from sanitary sewer lines, educating homeowners on the importance of pumping out septic tanks, or educating veterinarian clinics and kennels on the proper disposal of pet wastes, etc. You may already have BMPs in your SWMP that will address the source of impairment in your jurisdiction. If not, you can modify an existing BMP or propose an additional BMP to comply with this requirement. For each BMP, a schedule should be provided for implementing that BMP.

Step 4: The Plan must describe how the MS4 will annually assess the effectiveness of the chosen BMPs. Since monitoring is not required, the method of assessment may be specific to the BMP. For example, if the POC in the streams in your area is fecal coliform bacteria, then the BMPs you chose to implement might include conducting an infiltration/inflow study on the sanitary sewer lines and to install pet waste stations at the park. To assess the effectiveness of the first BMP, you could compare the gallons of raw sewage spilled from the sewer system over the past 5 years to see if a reduction in spills has occurred. For the pet waste BMP, you can determine the effectiveness through the reduced number of complaints or similar. You will be required to include an assessment on the effectiveness of the BMPs chosen to address the POC in each annual report. If the assessment demonstrates that the BMPs are not being effective to address the POC(s), then the MS4 will need to revise the existing BMPs or implement additional BMPs.

Step 5: The MS4 will be required to track the activities related to the Impaired Waters Plan and provide a summary in each annual report. The MS4 should ensure this tracking method is in place. It is recommended that the Plan state how the MS4 will track the activities performed during the reporting period.

Monitoring and Implementation Plan (population >10,000)

Step 1: The first step is to identify the impaired waters within your jurisdiction. This can be done by consulting the latest approved 305(b)/303(d) list on EPD's website. This list is updated every two years (in even numbered years), so ensure you are using the correct list. The list of impaired waters and pollutant(s) of concern (i.e. the pollutant(s) causing the water impairment) should be included in the plan. Every year that a new 305(b)/303(d) list is approved, the MS4 must review the list and address any newly listed impaired waters.

Step 2: The plan must include a map showing each of the impaired waters. In addition, you are required to identify any MS4 outfalls that discharge to these waters. These outfalls must be shown on the map. The permittee may include all of the impaired streams on one map. However, the permittee may find that if numerous streams need to be mapped, the map may be too complex. In that case, a separate map may be prepared for each impaired water. If you need time to identify the relevant outfalls, then the plan must include a schedule with a final completion date for identifying the outfalls.

The sample location needs to be shown on the map. In order to provide some flexibility, the sample location can be collected instream (i.e. upstream and downstream), from outfalls during wet weather events, or a combination of both locations. If you choose wet weather outfall monitoring and there are multiple outfalls along the impaired water, then you may choose representative outfalls for sampling.

Step 3: The plan must include specifics related to conducting monitoring, such as the sample type, frequency of sampling, and any seasonal considerations. Usually, the sample type is a grab; however, the type will be dependent upon the pollutant being sampled for. There is no requirement as far as the frequency of sampling. Many MS4s are conducting only one sampling event annually due to the expense. However, if the purpose of the sampling is to show a trend in water quality improvement, one sample per year may not be sufficient to meet this goal. Also, if the sampling is being performed for fecal coliform bacteria, then adequate samples must be collected to allow the calculation of a geometric mean. If you are already performing monitoring for another purpose (e.g. watershed monitoring plan, Metropolitan North Georgia Water Planning District), then you may be able to use that monitoring data to comply with the Phase II NPDES Permit monitoring requirement.

If sampling will be conducted with the goal of getting the impaired water removed from the 305(b)/303(d) list, then the permittee will need to prepare a Sampling Quality and Assurance Plan (SQAP). A SQAP guidance document is available on EPD's website, www.gaepd.org, titled "Guidance on Submitting Water Quality Data for Use by the Georgia Environmental Protection Division in 305(b)/303(d) Listing Assessments". The SQAP must be approved by EPD prior to the permittee starting to sample. The parameter being sampled will determine the sample type, number of samples collected, and any seasonal considerations. A final report must be submitted to EPD for an evaluation on whether the water may be "de-listed". All of this information may be found in EPD's SQAP guidance document. In the event that the waterbody is removed from the 305(b)/303(d) list, then the permittee may cease monitoring.

The monitoring plan must include a schedule showing when the monitoring will be implemented.

Step 4: The next step is to select BMPs. The purpose of the BMPs is to control or reduce the POC. The BMPs do not usually consist of structures, but rather practices and activities performed by the permittee. For example, if the pollutant of concern has been identified as fecal coliform bacteria, then the BMPs might include taking steps to reduce sewage overflows from sanitary sewer lines, educating homeowners on the importance of pumping out septic tanks, or educating veterinarian clinics and kennels on the proper disposal of pet wastes, etc. You may already have BMPs in your SWMP that will address the source of impairment in your jurisdiction. If not, you can modify an existing BMP or propose an additional BMP to comply with this requirement. For each BMP, a schedule should be provided for implementing that BMP.

Step 5: The Plan must describe how the MS4 will conduct an annual evaluation to assess the effectiveness of the chosen BMPs. The easiest way to evaluate BMP effectiveness is through the use of trend monitoring to determine if a reduction in the POC is occurring. If the MS4 does not choose to use

monitoring to evaluate BMP effectiveness, then the method to be used must be described in the Plan. The permittee will be expected to provide the monitoring data and the results of the assessment of BMP effectiveness in each annual report. If the assessment indicates the BMPs are not effective, then the MS4 must propose new or revised BMPs for the coming years.

Step 6: The MS4 will be required to track the activities related to the Impaired Waters Plan and provide a summary in each annual report. The MS4 should ensure this tracking method is in place. It is recommended that the Plan state how the MS4 will track the activities performed during the reporting period.