## Recertification Notice of Intent (NOI)

### Regulated Small Municipal Separate Storm Sewer Systems (MS4's) General Permit ARR040000

You must **complete, certify, and sign this Recertification Notice of Intent (NOI) form** and return it along with the **updated Stormwater Management Program (SWMP)** to the Department in order to continue permit coverage under the General Permit ARR040000. You must submit this form **no later than July 1, 2019.** Please keep a copy of this form for your records once completed and signed.

| Permittee Name | Permit Tracking Number | AFIN |
|---|---|---|
| City of Brookland | ARR040001 | 88-00830 |

If any changes or additions need to be made to the information shown below, please update the new information in the corrections section below and/or attach documentation.

| | Current Information in ADEQ's database | Corrections/Additions, If Needed |
|---|---|---|
| Small MS4 Physical Address | 613 Holman | |
| County | Craighead | |
| Urbanized/Core Areas | Jonesboro Urbanized Area | |
| Receiving Stream | Unnamed Tributary to Maple Slough Ditch | |
| Ultimate Receiving Stream | St. Francis River | |
| Contact Person & Title | Kenneth D. Jones, Mayor | |
| Telephone Number | (870) 935-0538 | |
| Cognizant Official & Title | Kenneth D. Jones, Mayor | |
| Responsible Official & Title | Kenneth D Jones, Mayor | |

Are the mailing and invoice addresses the same?

(Yes) or No* *If "No," please provide invoice address: _____

_____

_____

Additional Comments: _____

_____

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I certify that I have read and will comply with all the requirements of the Regulated Small Municipal Separate Storm Sewer Systems (MS4's) General Permit ARR040000.

**Responsible Official Name:** Kenneth D. Jones
**Responsible Official Title:** Mayor
**Responsible Official Signature:** Kenneth D Jones
**Date:** 1-4-2019

**Return the NOI form to the address below or send it electronically to: water.permit.application@adeq.state.ar.us or via ePortal at the following web address: https://eportal.adeq.state.ar.us/**

**NPDES Permits Section, Office of Water Quality**
**Arkansas Department of Environmental Quality**
**5301 Northshore Drive**
**North Little Rock, AR 72118-5317**

CEA
CIVIL ENGINEERING ASSOCIATES, LLC

September 17, 2019

Mr. Terry Liu, P.E.
Office of Water Quality, Permits Branch
Arkansas Energy & Environment DEQ
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

RE: MS4 Permit Recertification
Small Municipal Separate Storm Sewer Systems General Permit ARR040000
Permit Tracking # ARR040001, AFIN 88-00830
City of Brookland, Arkansas

Dear Mr. Liu:

In response to your comments dated September 12, 2019, we offer the following:

1. Enclosed is a REVISED copy of the updated "Storm Water Management Program" for the City of Brookland. The section concerning public outreach has been modified to include language concerning the specific targeting of the land development community. The City of Brookland is already meeting the other criteria of this section with respect to using multiple mechanisms to reach the public and targeting multiple storm water themes. The public outreach program reach more than 50% of the population when the City mails the propaganda with all of the water bills each year.
2. The section concerning public involvement/participation was not modified from the original submittal because the City has a public involve activity each year, which meets the requirement of this section.
3. The section concerning illicit discharge detection and elimination was modified to include specific language that "dry-weather screenings" will be part of the normal surveillance performed by the City during the term of the permit. The City has been doing this on a regular, but it was not specifically mentioned in the body of the previous update. In addition, specific language concerning the updating of the storm sewer map on an annual basis was also added.
4. The section concerning construction site storm water control was modified to include specific language that a SWPPP will be approved by the City for all construction activities within the corporate city limits of Brookland. This procedure was already being followed as part of their normal approval process for development within the City limits, it was just not specifically mentioned in the previous submission. These construction sites are also inspected by appropriate officials.
5. The section concerning post-construction management of storm water was also being followed, just not specifically mentioned in the previous submittal. As part of the approval process for land development within the City of Brookland, developers have to submit their drainage plans showing that post development runoff does not exceed pre-development runoff. This section of the REVISED SWMP has been modified to include specific language to this affect.

6. The section concerning pollution prevention/good housekeeping has been modified to include specific language concerning the training of municipal employees concerning pollution prevention/good housekeeping. In addition, this section also contain specific language concerning the regular inspection of the facilities to ensure that the appropriate level of good housekeeping methods are being utilized and maintained at each of the municipal facilities.

The Appendices of the SWMP show examples of some of the documents that are being utilized for public education/outreach and training. In addition, the Appendices include tables that summarize the work that has been performed by the City and its personnel concerning storm water management since the approval of the original SWMP. As you can see, the City is doing everything that is required under the MS4 General Permit ARR040000.

Please review the enclosed REVISED Storm Water Management Program as updated for the City of Brookland and advise me of any additional information that might be needed in order to approve the document and re-issue the City's permit.

Thank you for your cooperation in this matter. If you should have any questions or comments, do not hesitate to call me at (870) 972-5316, or on my cell phone at (870) 273-4185. I may also be reached via email at jselig@ce-associates.biz. Please send any written correspondence concerning this matter to our office in Jonesboro at the listed address.

Sincerely,

**CIVIL ENGINEERING ASSOCIATES**

John S. Selig, P.E.
Member/Principal

enclosure

copy: The Honorable Kenneth Jones, Mayor, City of Brookland (letter only)

# Storm Water Management Program (SWMP)

City of Brookland, Arkansas

NPDES General Permit ARR040000 for Regulated Small MS4's

May 2019
REVISED September 2019

Civil Engineering Associates, LLC
2114 East Matthews Avenue
Jonesboro, Arkansas 72401
(870) 972-5316
Fax: (870) 932-0432

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City of Brookland, Arkansas
Storm Water Management Program (SWMP)

NPDES General Permit ARR040000 for Regulated Small MS4's

May 2019

CERTIFICATION BY RANKING ELECTED OFFICIAL

In accordance with Part V – 5.7.2 of the Storm Water General Permit ARR040000, I hereby offer the following certification with regards to this Storm Water Management Program (SWMP):

> *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision, in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

Kenneth Jones Mayor
City of Brookland, Arkansas

September 16, 2019
Date

CITY OF BROOKLAND, ARKANSAS
Storm Water Management Program (SWMP)

NPDES General Permit ARR040000 for Regulated Small MS4's

May 2019

## BACKGROUND

Under the NPDES storm water program, operators of large, medium, and regulated small municipal separate storm sewer systems (MS4's) require authorization to discharge pollutants under an NPDES Permit. Regulated small MS4 operators have the option of choosing to be covered by an Individual Permit, a General Permit, or a modification of the existing Phase I MS4's Individual Permit. The Phase II Final Rule, published in the Federal Register on December 8, 1999, requires NPDES permit coverage for storm water discharges from certain regulated Small Municipal Separate Storm Sewer Systems (MS4's). The storm water Phase II regulations became effective on March 10, 2003, and these regulations affected the permitting of regulated Small MS4's.

With implementation of Phase II of the storm water regulations, ADEQ issued a General Permit to cover storm water discharges from Regulated Small MS4's in the state of Arkansas. This General Permit (ARR040000) was issued on December 31, 2003, with an effective date of February 1, 2004. All regulated small MS4's in the state were required to apply for permit coverage using the Notice of Intent (NOI) on or before the 90$^{th}$ day following the effective date of the permit (April 30, 2004).

The City of Brookland, Arkansas is a Regulated Small MS4, simply **because it is listed as part of the City of Jonesboro, Arkansas Urbanization Area (UA), as defined by the 2000 U.S. Census (see map of Jonesboro, Arkansas Urbanization Area on the following page)**. Based on inclusion in the Jonesboro, Arkansas UA, the City of Brookland, Arkansas was required to file a NOI for coverage under the Storm Water General Permit (ARR040000) for discharge of storm water from regulated Small MS4's.

The City of Brookland, AR filed the required NOI for permit coverage on March 9, 2004, and was issued permit tracking number ARR040001. The effective date of the permit was May 27, 2004. Based on the terms and conditions of the above-referenced General Permit, the City of Brookland, AR was required to prepare and implement a Storm Water Management Program (SWMP) by February 1, 2009. With the upcoming permit expiration date, the City of Brookland, AR has submitted the appropriate "Recertification Notice of Intent" and is required to update its SWMP. The SWMP outlined in this document demonstrates compliance with this requirement.

Based on a minimal population (1642 based on 2010 Census data), and inclusion in the Regulated Small MS4 program as part of the Jonesboro, AR UA, the available resources for Brookland, AR to administer the SWMP are somewhat limited. Therefore, the plan itself is fairly simple, but it does provide for effective utilization of available resources for administration.

## IMPLEMENTATION AND ADMINISTRATION

Overall responsibility for implementation and administration of this program shall rest with the Mayor, in conjunction with the Storm Water Discharge Commission (defined in the Strom Water Pollution Prevention and Erosion Control Ordinance contained in this Program). In addition, the Mayor will also utilize available city resources including the Code Enforcement Officer, city police officers, and other city personnel as deemed appropriate, to assist in the implementation and administration of this SWMP.

Specific duties of the Mayor, the Storm Water Discharge Commission, and the Code Enforcement Officer are more clearly defined within the Storm Water Pollution Prevention and Erosion Control Ordinance, which is included in its entirety within this SWMP.

## PROGRAM OUTLINE

The City of Brookland's SWMP follows the requirements outlined for regulated small MS4's in the ADEQ General Permit ARR040000. The required Minimum Control Measures outlined in the Permit are:

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control *
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping for Municipal Operations

*** The City of Brookland relies entirely on the State of Arkansas' Storm Water Construction Permit Program for regulatory framework and support in implementing and administering this Minimum Control Measure**

Given available resources, it is important for the City of Brookland to address the requirements of this permit in the simplest, and most efficient means possible. For that reason, the Minimum Control Measures associated with Illicit discharge prohibition, construction site permitting, and post-construction runoff control, are all covered in the Storm Water Pollution Prevention and Erosion Control Ordinance which is included within this SWMP.

This SWMP will include a brief summary of each Minimum Control Measure and an outline of actions taken to comply with each requirement.

## MINIMUM CONTROL MEASURE #1 – PUBLIC EDUCATION AND OUTREACH

An informed and knowledgeable community is crucial to the success of a storm water management program because it helps to ensure the following:

- **Greater Support** for the program as the public gains a greater understanding of the reasons why it is necessary and important. Public support is particularly beneficial when operators of small MS4's attempt to institute new funding initiatives for the SWMP or seek volunteers to help implement the SWMP; and
- **Greater Compliance** with the SWMP as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters.

The City of Brookland uses materials provided by the U.S. Environmental Protection Agency to communicate the importance of the SWMP to the citizens of Brookland.

Copies of some of these documents are enclosed with utility bills for all families, normally during the first quarter of each new year, while copies of other materials are simply maintained at the Mayor's office for distribution to visitors. In addition, the Mayor may elect from time to time to cover some of the storm water management topics in the quarterly newsletter which is available to all citizens via the City's website. In addition, a hard copy of this quarterly newsletter can be obtained from City Hall.

In addition to these public outreach mechanisms, the City of Brookland also provides each prospective developer within the corporate city limits of the City of Brookland with a copy of a brochure from the U.S. EPA that describes the development of a storm water pollution prevention plan.

Examples of some of the U.S. EPA documents are included in Appendix A of this SWMP.

## MINIMUM CONTROL MEASURE #2 – PUBLIC PARTICIPATION/INVOLVEMENT

The public can provide valuable input and assistance to a regulated small MS4, with regards to implementation of the SWMP. The City of Brookland strives to define ways that members of the general public can participate in storm water management efforts on at least an annual basis.

Each year, the Storm Water Discharge Commission will work with the Mayor to define target projects, typically including the voluntary clean out of storm water drainage ditches. During recent years, students and parents from the Brookland High School and volunteers from the community have worked together to clean out sections of the drainage system network.

Each year, the Storm Water Drainage Commission will publish the selected target project in this SWMP, along with a general list of volunteer participants.

## MINIMUM CONTROL MEASURE #3 – ILLICIT DISCHARGE DETECTION & ELIMINATION

Federal regulations define "Illicit Discharge" as any discharge to an MS4 that is not composed entirely of storm water, with a few listed exceptions. Some common sources of illicit discharges are sanitary wastewater, effluent from septic tanks, car wash wastewater, improper oil disposal, radiator flushing disposal, laundry wastewater, spills from roadway accidents, improper disposal of auto and household toxic chemicals, etc.

Illicit discharges can enter the MS4 system through either direct connections (i.e., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (i.e., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or paint/used oil dumped directly into a drain). The result is untreated discharges that can contribute to high levels of pollutants to receiving water bodies. Pollutant levels from these illicit discharges have been shown in EPA studies (particularly in areas with larger populations) to be high enough to degrade receiving water quality, and threaten aquatic wildlife and human health.

The City of Brookland has developed a storm sewer system map, included in this SWMP as Appendix B. This map shows the location of all storm water conveyances, and will help to identify potential illicit connections and/or areas of concern for potential illicit discharges. This map shall be updated on an annual basis.

In addition, the City of Brookland has adopted Ordinance #2009-1, which includes a prohibition of illicit discharges, including a definition for "illicit discharge". This ordinance is included in its entirety within this SWMP.

The City of Brookland will ensure that, at a minimum, the Code Enforcement Officer, City Police Officers, the Mayor, and members of the Storm Water Discharge Commission receive annual basic training with regards to recognizing potential illicit connections and/or illicit discharges. Basic materials such as those provided by the Storm Water Education Alliance (Montery County, CA) will be utilized to conduct these classes. Examples of these materials are included in Appendix C.

Finally, in conjunction with the above-referenced Ordinance, the Code Enforcement Officer and City Police Officers will evaluate potential illicit discharges and illicit connections as part of their normal patrol duties. The Code Enforcement Officer performs dry-weather screening of all stormwater outfalls located within the City of Brookland's permit coverage area. Any suspected violations of the Ordinance will be referred to the Mayor and the Storm Water Discharge Commission for evaluation. Any confirmed illicit discharge issues will be dealt with through the enforcement mechanisms defined in the Ordinance. Any actions taken in response to illicit discharges will be documented in Appendix D of this SWMP.

## MINIMUM CONTROL MEASURE #4 – CONSTRUCTION SITE RUNOFF CONTROL

Polluted storm water runoff from construction sites often flows into MS4's and ultimately is discharged into local rivers and streams. Sediment is usually the main pollutant of concern. Based on the 2004 National Water Quality Inventory, approximately 44% of the assessed stream

miles were not clean enough to support such uses as fishing and swimming. During a short period of time, construction sites can contribute more sediment into streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation's waters.

The City of Brookland will depend entirely on the State of Arkansas' Storm Water Construction Permit program for regulatory framework and support. In addition, the City of Brookland has included applicable language within the Storm Water Pollution Prevention and Erosion Control Ordinance (#2009-1) to address this issue from a local enforcement perspective. This ordinance is included in its entirety within this SWMP. This ordinance requires that storm water pollution prevention plans be submitted to the Storm Water Discharge Commission for approval prior to issuance of a construction permit.

Finally, in conjunction with the above-referenced Ordinance, the Code Enforcement Officer and City Police Officers will evaluate any construction site activity as part of their normal patrol duties. Any suspected violations of the construction site runoff requirements will be referred to the Mayor and Storm Water Discharge Commission for evaluation. Any confirmed violations of the construction site runoff requirements will be dealt with through the enforcement mechanisms defined in the Ordinance. Any actions taken in response to construction site runoff violations will be documented in Appendix E of this SWMP.

## MINIMUM CONTROL MEASURE #5 – POST-CONSTRUCTION RUNOFF CONTROL

Post-construction storm water management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to negatively impact receiving waterbodies. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction storm water discharges is the most cost-effective approach to storm water quality management.

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quality of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment, and possibly chemicals such as oil and grease, pesticides, etc. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody during storms. Increased impervious surfaces (i.e., parking lots, driveways, and rooftops) interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete, and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving stream.

The City of Brookland has included applicable language within the Storm Water Pollution Prevention and Erosion Control Ordinance (#2009-1) to address this issue form a local enforcement perspective. This Ordinance is included in its entirety within this SWMP. The ordinance specifically states that appropriate measures will be taken to ensure that the post-construction runoff quantity and quality shall not be any different than the pre-construction runoff. In addition, this ordinance provides the necessary language for the proper enforcement of post-construction runoff inspections.

In conjunction with the above-referenced Ordinance, the Code Enforcement Officer and City Police Officers will evaluate any post-construction site activity as part of their normal patrol duties to verify that the post-construction pollution prevention measures are being utilized and properly maintained. Any suspected violations of the post-construction site runoff requirements will be referred to the Mayor and Storm Water Discharge Commission for evaluation. Any confirmed violations of the post-construction site runoff requirements will be dealt with through the enforcement mechanisms defined in the Ordinance. Any actions taken in response to post-construction site runoff violations will be documented in Appendix F of this SWMP.

MINIMUM CONTROL MEASURE #6 – POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

This measure requires the small MS4 to examine, and if necessary, subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: 1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas; and, 2) results from actions such as environmentally damaging land development and flood management practices, or poor maintenance of storm sewer systems.

While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

The City of Brookland has established a sound operation and maintenance program for all city owned vehicles, the municipal wastewater treatment system, and other city owned operating equipment. In addition, the City of Brookland has implemented an effective and dependable trash pick-up and disposal program. This program ensures that all residential and commercial refuse is collected and disposed of in a sound manner.

To ensure that all city employees understand the potential impact of routine maintenance operations, trash collections and storm water system maintenance on the storm water receiving streams, the City of Brookland will, at a minimum, ensure that all city employees receive annual basic training with regards to storm water pollution prevention. Basic materials available from internet resources will be utilized to conduct these classes. Examples of these materials are included in Appendix G.

In addition to the training, routine inspections are performed on all municipal facilities to ensure that the appropriate level of pollution prevention/good housekeeping is in place and being properly maintained. Documentation of the training, inspections, and maintenance schedules are kept at City Hall.

# ORDINANCE #2009-1

## Storm Water Pollution Prevention and Erosion Control

STATE OF ARKANSAS

City of Brookland

**ORDINANCE NO. 2009-1**

**AN ORDINANCE FOR STORM WATER POLLUTION PREVENTION AND EROSION CONTROL**

BE IT ORDAINED AND ENACTED by the City Council of the City of Brookland, Arkansas, that:

**SECTION 1. Purposes**

The purpose and objectives of this Ordinance are as follows:

A. To maintain and improve the quality of water impacted by the storm drainage system within the City of Brookland.

B. To prevent the discharge of contaminated storm water runoff and illicit discharges from industrial, commercial, residential, and construction sites into the storm drainage system within the City of Brookland.

C. To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment, and other pollutants into the storm drainage system.

D. To facilitate compliance with state and federal standards and permits by owners of construction sites within the City of Brookland.

E. To enable the City of Brookland to comply with all federal and state laws and regulations applicable to the National Pollutant Discharge Elimination System (NPDES) permitting requirements for storm water discharges.

**SECTION 2. Administration**

Except as otherwise provided herein, the Storm Water Discharge Commission shall administer, implement, and enforce the provisions of this Ordinance. The Storm Water Discharge Commission shall be composed of three members appointed by



Mayor Kenneth D. Jones • P.O. Box 7 • Brookland, Arkansas 72417 • 870-935-0538 Business • 870-933-8814 FAX

the Mayor and approved by the City Council. At least one member of the Commission shall be a current member of the City Council.

**SECTION 3. Abbreviation**

The following abbreviations when used in this Ordinance shall have the following meanings:

ADEQ – Arkansas Department of Environmental Quality
BMP – Best Management Practices
CFR – Code of Federal Regulations
EPA – U. S. Environmental Protection Agency
HHW – Household Hazardous Waste
MS4 – Municipal Separate Storm Sewer System
NPDES – National Pollutant Discharge Elimination System
SWP3 – Storm Water Pollution Prevention Plan

**SECTION 4. Definitions**

Unless a provision explicitly states otherwise, the following terms and phrases as used in this Ordinance, shall have the meanings hereinafter designated.

**Best Management Practices (BMP's)** - refers to management practices and methods to control pollutants in storm water. BMP's are of two types: "source controls" (nonstructural) and "treatment controls" (structural). Source controls are practices that prevent pollution by reducing potential pollutants at their source, before they come into contact with storm water. Treatment controls remove pollutants from storm water. The selection, application and maintenance of BMP's must be sufficient to prevent or reduce the likelihood of pollutants entering the storm drainage system.

**City** - the City of Brookland, Arkansas.

**Code Enforcement Officer** - the person appointed to the position of code enforcement officer by the city of Brookland, AR.

**Construction Site** - any location where construction activity occurs.

**Contaminated** - containing harmful quantities of pollutants.

**Contractor**- any person or firm performing or managing construction work at a construction site, including any construction manager, general contractor or subcontractor. Also includes, but is not limited to, earthwork, paving, building, plumbing, mechanical, electrical or landscaping contractors, and material suppliers delivering materials to the site.

**Discharge** - any addition or release of any pollutant, storm water or any other substance whatsoever into storm drainage system.

**Discharger** - any person who causes, allows, permits, or is otherwise responsible for, a discharge, including, without limitation, any owner of a construction site or industrial facility.

**Domestic Sewage** - sewage originating primarily from kitchen, bathroom and laundry sources, including waste from food preparation, dishwashing, garbage grinding, toilets, baths, showers and sinks.

**Earthwork** - the disturbance of soils on a site associated with clearing, grading, or excavation activities.

**Environmental Protection Agency (EPA)** - the United States Environmental Protection Agency, the regional office thereof, any federal department, agency, or commission that may succeed to the authority of the EPA, and any duly authorized official of the EPA or such successor agency.

**Facility** - any building, structure, installation, process, or activity from which there is or may be a discharge of a pollutant.

**Fertilizer** - a substance or compound that contains an essential plant nutrient element in a form available to plants and is used primarily for its essential plant nutrient element content in promoting or stimulating growth of a plant or improving the quality of a crop, or a mixture of two or more fertilizers.

**Fire Protection Water** - any water, and any substances or materials contained therein, used by any person to control or extinguish a fire, or to inspect or test fire equipment.

**Garbage** - putrescible animal and vegetable waste materials from the handling, preparation, cooking, or consumption of food, including waste materials from markets, storage facilities, and the handling and sale of produce and other food products.

**Groundwater** - any water residing below the surface of the ground or percolating into or out of the ground.

**Harmful Quantity** - the amount of any substance that the Mayor determines will cause an adverse impact to storm drainage system or will contribute to the failure of the City to meet the water quality based requirements of the NPDES permit for discharges from the MS4.

**Hazardous Substance** - any substance listed in Table 302.4 of 40 CFR Part 302.

**Hazardous Waste** - any substance identified or listed as a hazardous waste by the EPA pursuant to 40 CFR Part 261.

**Household Hazardous Waste (HHW)** - any material generated in a household (including single and multiple residences) that would be classified as hazardous.

**Illegal Discharge** - See illicit discharge below.

**Illicit Discharge** - any discharge to the storm drainage system that is prohibited under this Ordinance.

**Illicit Connection** - any drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the storm drainage system.

**Industrial Waste (or commercial waste)** - any wastes produced as a byproduct of any industrial, institutional or commercial process or operation, other than domestic sewage.

**Land Alteration** - the process of grading, clearing, filling, excavating, quarrying, tunneling, trenching, construction or similar activities

**Mechanical Fluid** - any fluid used in the operation and maintenance of machinery, vehicles and any other equipment, including lubricants, antifreeze, petroleum products, oil and fuel.

**Mobile Commercial Cosmetic Cleaning (or mobile washing)** - power washing, steam cleaning, and any other method of mobile cosmetic cleaning, of vehicles and/or exterior surfaces, engaged in for commercial purposes or related to a commercial activity.

**Municipal Separate Storm Sewer System (MS4)** - the system of conveyances, including roads, streets, curbs, gutters, ditches, inlets, drains, catch basins, pipes, tunnels, culverts, channels, detention basins and ponds owned and operated by the City and designed or used for collecting or conveying storm water, and not used for collecting or conveying sanitary sewage.

**NPDES** - the National Pollutant Discharge Elimination System.

**NPDES Permit** - a permit issued by EPA that authorizes the discharge of pollutants to Waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

**Notice of Violation** - a written notice detailing any violations of this Article and any action expected of the violators.

**Oil** - any kind of oil in any form, including, but not limited to: petroleum, fuel oil, crude oil, synthetic oil, motor oil, cooking oil, grease, sludge, oil refuse, and oil mixed with waste.

**Release** - to dump, spill, leak, pump, pour, emit, empty, inject, leach, dispose or otherwise introduce into the storm drainage system.

**Rubbish** - non-putrescible solid waste, excluding ashes, that consist of: (A) combustible waste materials, including paper, rags, cartons, wood, excelsior, furniture, rubber, plastics, yard trimmings, leaves, and similar materials; and (B) noncombustible waste materials, including glass, crockery, tin cans, aluminum cans, metal furniture, and similar materials that do not burn at ordinary incinerator temperatures (1600 to 1800 degrees Fahrenheit).

**Sanitary Sewage** - the domestic sewage and/or industrial waste that is discharged into the City sanitary sewer system and passes through the sanitary sewer system to the City sewage treatment plant for treatment.

**Sanitary Sewer** - the system of pipes, conduits, and other conveyances which carry industrial waste and domestic sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, to the City sewage treatment plant (and to which storm water, surface water, and groundwater are not intentionally admitted).

**Sediment** - soil (or mud) that has been disturbed or eroded and transported naturally by water, wind or gravity, or mechanically by any person.

**Septic Tank Waste** - any domestic sewage from holding tanks such as vessels, chemical toilets, campers, trailers, septic tanks and aerated tanks.

**Shall** - Means mandatory; may means discretionary.

**Site** - the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

**Solid Waste** - any garbage, rubbish, refuse and other discarded material, including solid, liquid, semisolid, or contained gaseous material, resulting from industrial, municipal, commercial, construction, mining or agricultural operations, and residential, community and institutional activities.

**State** - The State of Arkansas.

**Storm Drainage System** - all surfaces, structures and systems that contribute to or convey storm water, including private drainage systems, the MS4, surface water, groundwater, Waters of the State and Waters of the United States.

**Storm water** - runoff resulting from precipitation.

**Storm Water Discharge Commission** – Means a Commission of at least three (3) individuals, one of which must be an active member of the City Council, appointed by the Mayor and approved by the City Council, for the purpose of assisting with the implementation and administration of this Ordinance and the Storm Water Management Program.

**Storm water Pollution Prevention Plan (SWP3)** - a document that describes the Best Management Practices to be implemented at a site, to prevent or reduce the discharge of pollutants.

**Subdivision Development** - Includes activities associated with the platting of any parcel of land into two or more lots and includes all construction activity taking place thereon.

**Surface Water** - water bodies and any water temporarily residing on the surface of the ground, including oceans, lakes, reservoirs, rivers, ponds, streams, puddles, channelized flow and runoff.

**Uncontaminated** - not containing harmful quantities of pollutants.

**Used Oil (or Used Motor Oil)** - any oil that as a result of use, storage, or handling, has become unsuitable for its original purpose because of impurities or the loss of original properties.

**Utility Agency** - private utility companies, City departments or contractors working for private utility companies or City departments, engaged in the construction or maintenance of utility distribution lines and services, including water, sanitary sewer, storm sewer, electric, gas, telephone, television and communication services.

**Wastewater** - any water or other liquid, other than uncontaminated storm water, discharged from a facility.

**Water of the State (or water)** - any groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, inside the territorial limits of the State, and all other bodies of surface water, natural or artificial, navigable or non-navigable, and including the beds and banks of all water courses and bodies of surface water, that are wholly or partially inside or bordering the State or inside the jurisdiction of the State.

**Water Quality Standard** - the designation of a body or segment of surface water in the State for desirable uses and the narrative and numerical criteria deemed by State or Federal regulatory standards to be necessary to protect those uses.

**Waters of the United States** - all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which

are subject to the ebb and the flow of the tide; all interstate waters, including interstate wetlands; all other waters the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce; all impoundments of waters otherwise defined as waters of the United States under this definition; all tributaries of waters identified in this definition; all wetlands adjacent to waters identified in this definition; and any waters within the federal definition of "waters of the United States" at 40 CFR Section 122.2; but not including any waste treatment systems, treatment ponds, or lagoons designed to meet the requirements of the Federal Clean Water Act.

**Wetland** - any area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**Yard Waste** - leaves, grass clippings, tree limbs, brush, soil, rocks or debris that result from landscaping, gardening, yard maintenance or land clearing operations.

**SECTION 5. Prohibitions**

A. No person shall release or cause to be released into the storm drainage system, any discharge that is not composed entirely of uncontaminated storm water, except as allowed herein. Common storm water contaminates include trash, yard waste, lawn chemicals, pet waste, wastewater, oil, petroleum products, cleaning products, paint products, hazardous waste, and sediment.

B. Any discharge shall be prohibited by this section, if the discharge in question has been determined by the Storm Water Discharge Commission to be a source of pollutants to the storm drainage system.

C. The construction, use, maintenance or continued existence of illicit connections to the storm drain system are prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

D. No Person shall connect a line conveying sanitary sewage, domestic sewage or industrial waste to the storm drainage system, or allow such a connection to continue.

E. No person shall maliciously destroy or interfere with BMP's implemented pursuant to this Ordinance.

**SECTION 6. Exemptions**

The following non-storm water discharges are deemed acceptable, and not a violation of this section:

A. A discharge authorized by an NPDES permit other than the NPDES permit for discharges from the MS4;

B. Uncontaminated waterline flushing and other infrequent discharges from potable water sources;

C. Infrequent uncontaminated discharge from landscape irrigation or lawn watering;

D. Discharge from the occasional noncommercial washing of vehicles on properties zoned R-1, R-2, and R-3.

E. Uncontaminated discharge from foundation, footing or crawl space drains, sump pumps and air conditioning condensation drains;

F. Uncontaminated ground water, including rising ground water, ground water infiltration into storm drains, pumped ground water and springs;

G. Diverted stream flows and natural riparian habitat or wetland flows;

H. A discharge or flow of fire protection water that does not contain oil or hazardous substances or materials.

**SECTION 7. Requirements applicable to certain dischargers.**

A. *Private drainage system maintenance.* The owner of any private drainage system shall maintain the system to prevent or reduce the discharge of pollutants. This maintenance shall include, but is not limited to, sediment removal, bank erosion repairs, maintenance of vegetative cover, and removal of debris from pipes and structures.

B. *Minimization of irrigation runoff.* A discharge of irrigation water that is of sufficient quantity to cause flooding of the storm drainage system is prohibited. Irrigation systems shall be managed to reduce the discharge of water from the site.

C. *Maintenance of Equipment.* Any leak or spill related to equipment maintenance in an outdoor, uncovered area shall be contained to prevent the potential release of pollutants. Vehicles, machinery, and equipment must be maintained to reduce leaking fluids.

D. *Materials Storage.* Materials shall be stored to prevent the potential release of pollutants. The uncovered, outdoor storage of unsealed containers of hazardous substances is prohibited.

E. *Pesticides, herbicides, and fertilizers.* Pesticides, herbicides and fertilizers shall be applied in accordance with manufacturer recommendations, and applicable laws. Excessive application shall be avoided.

F. *Prohibition on use of pesticides and fungicides banned from manufacture.* Use of any pesticide, herbicide or fungicide, the manufacture of which has been either voluntarily discontinued or prohibited by the Environmental Protection Agency, or any federal or state regulation is prohibited.

G. *Open drainage channel maintenance.* Every person owning or occupying property through which an open drainage channel passes, shall keep and maintain that part of the drainage channel within the property, free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or retard the flow of water through the drainage channel. In addition, the owner or occupant shall maintain existing privately owned structures adjacent to a drainage channel, so that such structures will not become a hazard to the use, function, or physical integrity of the drainage channel.

**SECTION 8. Release reporting and clean-up.**

Any person responsible for a known or suspected release of materials which are resulting in, or may result in illegal discharges to the storm drainage system, shall take all necessary steps to ensure the discovery, containment, abatement and cleanup of such release. In the event of such a release of a hazardous material, said person shall comply with all state, federal and local laws requiring reporting, clean-up, containment and any other appropriate remedial action in response to the release. In the event of such a release of non-hazardous materials, said person shall notify the Mayor's Office no later than 5:00 pm of the next business day.

**SECTION 9. Authorization to adopt and impose best management practices.**

The City of Brookland may adopt and impose requirements identifying best management practices for any activity, operation, or facility, which may cause a discharge of pollutants to the storm drainage system. Where specific BMP's are required, every person undertaking such activity or operation, or owning or operating such facility shall implement and maintain these BMP's at their own expense.

**SECTION 10. General requirements for construction sites.**

A. [*Responsible Party.*] The owner of a site of construction activity shall be responsible for compliance with the requirements of this ordinance, and with the requirements of the state of Arkansas Construction General Permit (for discharge of storm water from construction sites), which is incorporated in its entirety herein. The state Construction General Permit was developed in accordance with provisions of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Code Ann. 8-4-101 et seq., and the Clean Water Act (33 U.S.C. 1251 et. seq.).

B. *Waste Disposal.* Solid waste, industrial waste, yard waste, and any other pollutants or waste on any construction site shall be controlled through use of best management practices. Waste or recycling containers shall be provided and maintained by the owner or contractor, on construction sites where there is potential for release of waste. Uncontained waste that may blow, wash, or otherwise be released from the site is prohibited.

C. [*Release of materials.*] Ready-mixed concrete, or any materials resulting from the cleaning of vehicles or equipment containing, or used in transporting, or applying ready-mixed concrete, shall be contained on construction sites for proper disposal. Release of these materials is prohibited.

D. *Erosion and sediment control.* Best management practices shall be implemented to prevent the release of sediment from construction sites. Disturbed areas shall be minimized, disturbed soil shall be managed, and construction site entrances shall be managed to prevent sediment tracking. Excessive sediment tracking onto public streets shall be removed immediately.

E. [*Continued compliance – Post Construction.*] Upon completion of permitted construction activity on any site, the property owner and subsequent property owners, will be responsible for continued compliance with the requirements of this article, in the course of maintenance, reconstruction, or any other construction activity on the site.

**SECTION 11. Construction sites requiring an approved SWP3.**

This section applies to all construction sites where construction activities on a site will disturb soil, or remove vegetation on one (1) or more acres of land during the life of the construction project: An approved Storm Water Pollution Prevention Plan (SWP3) for the project must be provided, and implemented by the construction site owner as follows:

A. The area disturbed shall be assumed to include the entire property area unless all applicable plans specifically exclude certain areas from disturbance.

B. The SWP3 must be provided by the owner, and submitted to the city for approval. A copy of the SWP3 shall be submitted to the Storm Water Discharge Commission.

For sites subject to plan review by the city, the plan will not be released for construction until an approved SWP3 has been obtained.

C. The Storm Water Discharge Commission will review the SWP3 submitted for the site, and will return either an approval of the SWP3, or a request for revisions. Construction activity, including any soil disturbance or removal of vegetation, shall not commence on the site until the Commission has issued an approval of the SWP3.

D. The owner/developer bears the responsibility for implementation of the SWP3, and notification of all contractors and utility agencies on the site.

E. The owner/developer bears the responsibility for meeting compliance with the State of Arkansas Construction General Permit (for discharge of storm water from construction sites).

**SECTION 12. Subdivision developments requiring an approved SWP3**

Where construction of a subdivision development will disturb soil, or remove vegetation on one (1) or more acres of land during the life of the development project, approved storm water pollution prevention plans (SWP3's) for the project must be provided, and implemented by the subdivision owner/developer as follows:

A. The area disturbed shall be assumed to include the entire platted area.

B. SWP3's must be provided by the subdivision owner/developer, and submitted to the Storm Water Discharge Commission for approval.

C. SWP3's must be provided for all phases of development, including sanitary sewer construction, storm drainage system construction, waterline, street and sidewalk construction, general grading, and the construction of individual homes. The subdivision owner/developer will not be required to provide an SWP3 for the activities of utility agencies within the subdivision.

D. The subdivision owner/developer shall provide a copy of the approved SWP3's to all utility agencies prior to their working within the subdivision.

E. The subdivision owner/developer bears the responsibility for implementation of the approved SWP3's for all construction activity within the development, excluding construction managed by utility agencies.

F. The subsequent owner of an individual lot bears the responsibility for continued implementation of the approved SWP3's for all construction activity within, or related to the individual lot, excluding construction managed by utility agencies.

**SECTION 13. Storm water pollution prevention plans.**

Preparation and implementation of storm water pollution prevention plans for construction activity shall comply with the following:

A. *Preparation.*

(1) The SWP3 shall be prepared under the direction of a qualified person.

(2) The SWP3 shall provide the name, address, and phone number of the project owner, for purposes of correspondence and enforcement.

(3) The SWP3 shall identify existing natural resources such as streams, forest cover, and other vegetative cover.

(4) The SWP3 shall specify and provide detail for all BMP's necessary to meet the requirements of this article, including any applicable BMP's that have been adopted and imposed by the city of Brookland.

(5) The SWP3 shall specify when each BMP will be installed, and for how long it will be maintained within the construction sequence. Multiple plans may be required for major phases of construction such as rough grading, building construction and final grading.

(6) The SWP3 shall delineate all anticipated disturbed areas and specify the vegetative cover that must be established in those areas to achieve final stabilization.

B. *Implementation.*

(1) BMP's shall be installed and maintained by qualified persons. The owner/developer, or their representative shall be able to provide, upon the Code Enforcement Officer's request, a copy of the SWP3 on site, and shall be prepared to respond to unforeseen maintenance of specific BMP's.

(2) The owner/developer or their representative shall inspect all BMP's at least once per month, and within 24 hours after a rainfall of one quarter of an inch or more, as measured at the site, or generally reported in the Brookland area.

(3) Based on inspections performed by the owner/developer, or by authorized city personnel, modifications to the SWP3 will be necessary if at any time the specified BMP's do not meet the objectives of this article, or those of the state of Arkansas Construction General Permit. In this case, the owner/developer, or authorized representative shall meet with authorized city personnel to determine the appropriate modifications. All modifications shall be completed within seven (7) days of the referenced inspection, except in the circumstances necessitating more

timely attention, and shall be recorded on the owner's copy of the SWP3.

**SECTION 14. Requirements for utility construction.**

A. Utility agencies shall be responsible for compliance with the requirements of this article.

B. Utility agencies shall develop and implement best management practices (BMP's) to prevent the discharge of pollutants on any site of utility construction within the city of Brookland. In addition, the city may adopt and impose BMP's on utility construction activity.

C. Utility agencies shall implement BMP's to prevent the release of sediment from utility construction sites. Disturbed areas shall be minimized, disturbed soil shall be managed, and construction site entrances shall be managed to prevent sediment tracking. Excessive sediment tracked onto public streets shall be removed immediately.

D. Prior to entering a construction site or subdivision development, utility agencies shall have obtained from the owner, a copy of any SWP3's for the project. Any disturbance to BMP's resulting from utility construction, shall be repaired immediately by the utility company, in compliance with the SWP3.

**SECTION 15. Enforcement personnel authorized.**

The following personnel employed by the city shall have the power to issue notices of violations and implement other enforcement actions under this article, as provided by the City of Brookland.

A. All authorized personnel under the supervision of the Mayor.

B. All code enforcement officers under the supervision of the Mayor.

C. All health officers that are authorized representatives of the Craighead County Health Department.

**SECTION 16. Right of entry and sampling.**

A. Whenever the code enforcement officer has cause to believe that there exists, or potentially exists, in or upon any premises any condition which constitutes a violation of this ordinance, the code enforcement officer shall have the right to enter the premises at any reasonable time to determine if the discharger is complying with all requirements of this ordinance. In the event that the owner or occupant refuses

entry after a request to enter has been made, the city is hereby empowered to seek assistance from a court of competent jurisdiction in obtaining such entry.

B. The Mayor and/or code enforcement officer shall have the right to set up on the property of any discharger to the storm drainage system, such devices that are necessary to conduct sampling of discharges.

**SECTION 17. Enforcement procedures.**

This Ordinance establishes a formal enforcement procedure to be followed by the City of Brookland Mayor and Storm Water Discharge Commission, when enforcement action is necessary on sites that do not comply with the city's storm water pollution prevention and erosion control ordinance. Enforcement cases can be generated in any of three ways: (1) through the construction review (inspection) process; (2) through complaints from individuals, groups, etc.; and (3) through referrals from city/state agencies. Procedures to be followed for each of these methods are outlined below:

A. *Construction Review (Inspection).* Every effort is made to use the construction review process to correct deficiencies in site compliance whenever possible. Should that process fail to achieve expected results, or if the code enforcement officer feels that a violation is serious enough to warrant enforcement action, the following procedures shall be followed:

(1) *Issuance of Notice of Violation.* If site deficiencies are noted, the owner/developer, or authorized agent shall be given a notice of violation. The notice of violation shall be specific as to the noted violation, corrective measures to be taken, and time frame allowed for completion of the work.

(2) *Compliance Review.* At the end of the time period specified above, a follow-up site inspection shall take place to determine whether compliance has been achieved. Depending on that determination, the following actions may occur:

a. Site violations corrected. If all previous site violations have been corrected, the code enforcement officer shall issue an inspection report stating that fact, and the site shall be returned to a normal construction review status.

b. Previous violations not corrected. If previously noted violations have not been satisfactorily corrected, then further actions may be initiated as outlined in the following section.

B. *Submissions from the General Public.* Members of the general public may submit information pertaining to this ordinance to the City of Brookland Storm Water Discharge Commission. The Mayor will consider such submissions as they pertain

to the implementation and enforcement of this ordinance, and will provide written or verbal response to the person submitting the information.

C. *Referrals from other agencies.* Referrals from other agencies will be handled in the following manner:

(1) Cases will be referred directly to the Mayor. At this point, the Mayor, in conjunction with the Storm Water Discharge Commission, will determine if enforcement actions are warranted, and if proper documentation has been obtained. If the Mayor determines that action is required, the enforcement process will be set into motion.

(2) Cases received by the Mayor will be handled on a first come, first served basis. All enforcement actions will be initiated by a site inspection to verify site conditions that caused the case to be referred. If conditions have been corrected, or do not exist as stated in the referral, the case will be returned to file for documentation and reporting purposes. If conditions exist as stated in the referral, enforcement actions will proceed.

(3) Once site conditions have been verified and the site is determined to be in a state of noncompliance, a Notice to Comply will be issued to the owner/developer informing them that they are not in compliance with the city's storm water pollution prevention and erosion control ordinance, the steps needed to be taken to get into compliance, and that they have an established time frame to complete the work. At the end of the period the code enforcement officer will re-inspect the site to check for compliance. If all work has been satisfactorily completed, the case will be returned to file for documentation and reporting purposes. If the work has not been satisfactorily completed within the established time frame, a citation (ticket) will be issued to the owner/developer and follow-up will be done until the site is brought back into compliance.

D. *Enforcement options for failure to comply.*

(1) The City of Brookland Mayor, in conjunction with the Storm Water Discharge Commission, may issue a stop work order to any persons violating any provision of the city's storm water pollution prevention and erosion control ordinance by ordering that all site work stop, except that necessary to comply with any administrative order.

(2) The City of Brookland Storm Water Discharge Commission may request that the Planning and Zoning Commission refrain from issuing any further building or grading permits until outstanding violations have been remedied.

(3) The City of Brookland code enforcement officer may initiate penalties as stipulated herein. Complete information concerning enforcement and penalties is described below.

E. *Action without prior notice.* Any person who violates a prohibition, or fails to meet a requirement of this article will be subject, without prior notice, to one or more of the enforcement actions, when attempts to contact the person have failed and the enforcement actions are necessary to stop an actual or threatened discharge which presents, or may present, imminent danger to the environment, or to the health or welfare of persons, or to the storm drainage system.

F. *Enforcement Actions.*

(1) *Recovery of Costs.* Within 30 days after abatement by city representatives, the Mayor shall notify the property owner of the costs of abatement, including administrative costs, and the deadline for payment. The property owner may protest the assessment before the city council. The written protest must be received by the Mayor's office within 15 days of the date of notification. A hearing on the matter will be scheduled before the city council. The decision of the city council shall be final. If the amount due is not paid within the protest period, or within 10 days of the decision of the city council, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. A copy of the resolution shall be turned over to the county clerk so that the clerk may enter the amounts of the assessment against the parcel as it appears on the current assessment roll, and the treasurer shall include the amount of the assessment of the bill for taxes levied against the parcel of land.

(2) *Termination of utility services.* After lawful notice to the customer and property owner concerning the proposed disconnection, the Mayor shall have the authority to order the disconnection of city water, sanitary sewer and/or sanitation services, upon a finding by the Mayor that the disconnection of utility services will remove a violation of this article that poses a public health hazard or environmental hazard.

(3) *Performance Bonds.* Where necessary for the reasonable implementation of this article, the Mayor may, by written notice, order any owner of a construction site or subdivision development to file a satisfactory bond, payable to the city, in a sum not to exceed a value determined by the Mayor to be necessary to achieve consistent compliance with this article. The city may deny approval of any building permit, subdivision plat, site development plan, or any other city permit or approval necessary to commence or continue construction, or to assume occupancy, until such a performance bond has been filed. The owner may protest the amount of the performance bond before the city council. The written protest must be received by the Mayor's office within 15 days of the date of the notification. A hearing on the matter will be scheduled before the city council. The decision of the city council shall be final.

(4) *Criminal Prosecution.* Any person who violates, or continues to violate a prohibition or requirement of this article shall be liable to criminal

prosecution to the fullest extent of the law, and shall be subject to criminal penalties.

G. *Criminal Penalties.* The violation of any provision of this article shall be deemed a municipal offense. When all other efforts have failed to correct non-compliance issues, persons violating this ordinance shall, upon an adjudication of guilt or a plea of no contest, be fined according to the schedule of fines referenced below. Each separate day on which a violation is committed, or continues, shall constitute a separate offense.

**Schedule of Fines**

| Offense | Fine (Per Offense) |
|---|---|
| First | $500.00 |
| Second & Subsequent | $1,000.00 |

H. *Other legal action.* Notwithstanding any other remedies or procedures available to the city, if any person discharges into the storm drainage system in a manner that is contrary to the provisions of this article, the city attorney may commence an action for appropriate legal and equitable relief including damages and costs in any court of competent jurisdiction. The city attorney may seek a preliminary or permanent injunction, or both, which restrains or compels the activities on the part of the discharger.

**SECTION 18. Emergency Clause.** It is hereby found and declared by the City Council of the City of Brookland, Arkansas, that the quality of water impacted by storm water drainage and the prevention of the discharge of contaminated storm water runoff is important to the preservation of public peace, health and safety; therefore, an emergency is hereby declared to exist and this Ordinance shall take effect immediately upon its passage and adoption.

**PASSED AND ADOPTED** this 16th day of April, 2009.

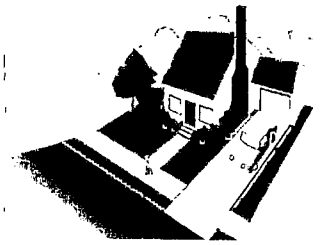
Kenneth D. Jones
KENNETH D. JONES, MAYOR

ATTEST:
Johna Davis
JOHNA DAVIS, RECORDER

# APPENDIX A

## Examples of Materials Used for Public Education/Outreach


Clean Water
Everybody's
Business



## 10 Things You Can Do to Prevent Stormwater Runoff Pollution

- Use fertilizers sparingly and sweep up driveways, sidewalks, and gutters
- Never dump anything down storm drains or in streams
- Vegetate bare spots in your yard
- Compost your yard waste
- Use least toxic pesticides, follow labels, and learn how to prevent pest problems
- Direct downspouts away from paved surfaces; consider a rain garden to capture runoff
- Take your car to the car wash instead of washing it in the driveway
- Check your car for leaks and recycle your motor oil
- Pick up after your pet
- Have your septic tank pumped and system inspected regularly

EPA United States Environmental Protection Agency

For more information, visit
www.epa.gov/nps or
www.epa.gov/npdes/stormwater

EPA
United States
Environmental Protection
Agency

EPA 841-F-03-003

# Protecting Water Quality *from* URBAN RUNOFF

## Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

***Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?***

## How Urbanized Areas Affect Water Quality

### Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

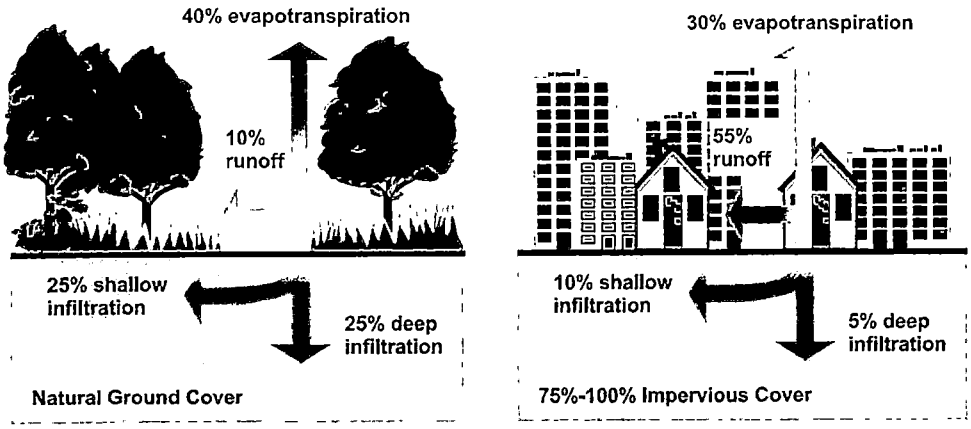
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

### Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.




*Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface ruunoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.*

## Managing Urban Runoff

### What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

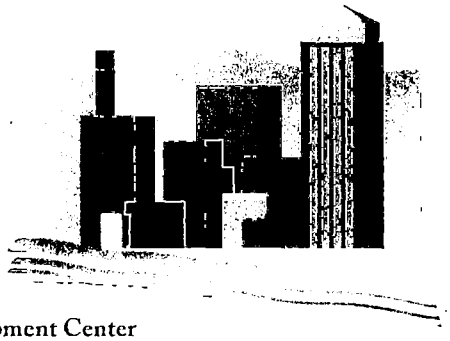
In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

### Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

### Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.



## Related Publications

**Turn Your Home into a Stormwater Pollution Solution!**
www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

**National Management Measures to Control Nonpoint Source Pollution from Urban Areas**
www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

**Onsite Wastewater Treatment System Resources**
www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

**Low Impact Development Center**
www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

**Stormwater Manager's Resource Center (SMRC)**
www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

**Strategies: Community Responses to Runoff Pollution**
www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

## For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/nps

February 2003

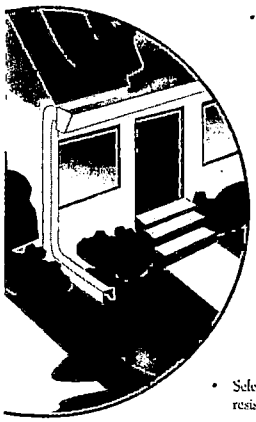
As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Stormwater can flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water. Polluted runoff is the nation's greatest threat to clean water.

By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, rivers, wetlands, and coastal waters. Remember to share the habits with your neighbors!

## *Healthy Household Habits for Clean Water*

### Vehicle and Garage

- Use a commercial car wash or wash your car on a lawn or other unpaved surface to minimize the amount of dirty, soapy water flowing into the storm drain and eventually into your local waterbody.

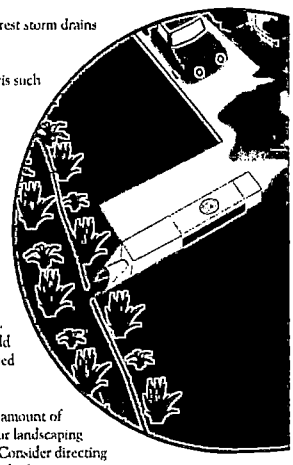


- Check your car, boat, motorcycle, and other machinery and equipment for leaks and spills. Make repairs as soon as possible. Clean up spilled fluids with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.
- Recycle used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.

### Lawn and Garden

- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast calls for rain; otherwise, chemicals will be washed into your local stream.
- Select native plants and grasses that are drought- and pest-resistant. Native plants require less water, fertilizer, and pesticides.
- Sweep up yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater your lawn. Water during the cool times of the day, and don't let water run off into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local waterbodies. Vegetate bare spots in your yard to prevent soil erosion.

### Home Repair and Improvement



- Before beginning an outdoor project, locate the nearest storm drains and protect them from debris and other materials.
- Sweep up and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the smallest amounts possible, and follow the directions on the label. Clean up spills immediately, and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use nontoxic, biodegradable, recycled, and recyclable products whenever possible.
- Clean paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.
- Reduce the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.

### Pet Care

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

### Swimming Pool and Spa

- Drain your swimming pool only when a test kit does not detect chlorine levels.
- Whenever possible, drain your pool or spa into the sanitary sewer system.
- Properly store pool and spa chemicals to prevent leaks and spills, preferably in a covered area to avoid exposure to stormwater.

### Septic System Use and Maintenance

- Have your septic system inspected by a professional at least every 3 years, and have the septic tank pumped as necessary (usually every 3 to 5 years).
- Care for the septic system drainfield by not driving or parking vehicles on it. Plant only grass over and near the drainfield to avoid damage from roots.
- Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can destroy the biological treatment taking place in the system. Other items, such as diapers, paper towels, and cat litter, can clog the septic system and potentially damage components.

*Storm drains connect to waterbodies!*

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EPA 833-B-00-003
January 2003

**Remember: Only rain down the drain!**

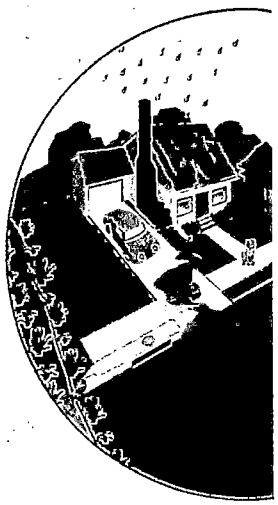
**For more information, visit**
**www.epa.gov/npdes/stormwater**
**or**
**www.epa.gov/nps**


*Make your home*

**The**

# SOLUTION TO STORMWATER POLLUTION!

*A homeowner's guide to healthy habits for clean water*

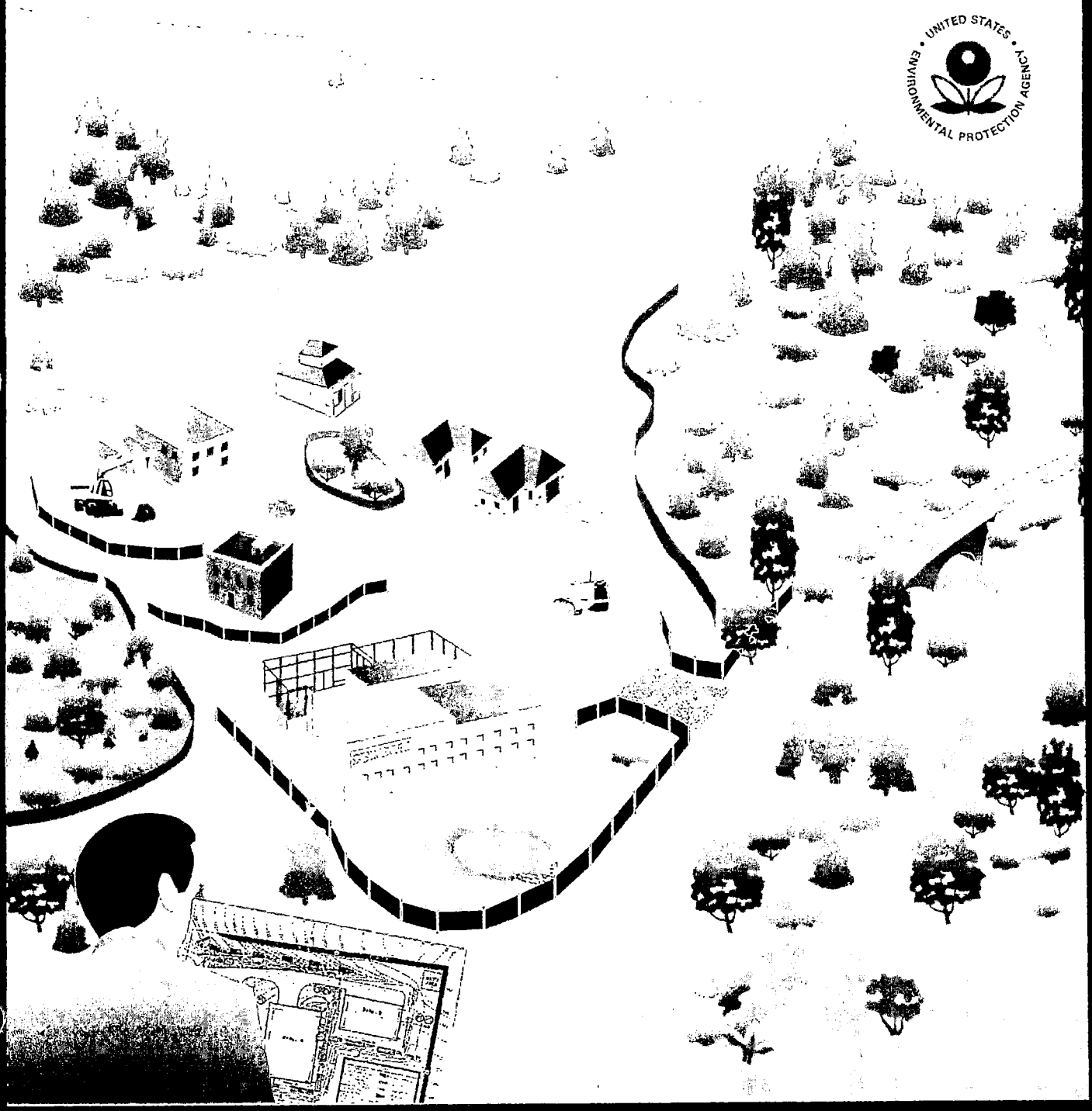


EPA United States Environmental Protection Agency

# Developing Your Stormwater Pollution Prevention Plan

## A Guide for Construction Sites

EPA-833-R-06-004
May 2007



# Developing Your Stormwater Pollution Prevention Plan

## A Guide for Construction Sites

### Who?

Construction site operators (generally, the person who has operational control over construction plans and/or the person who has day-to-day supervision and control of activities occurring at the construction site)

### Where?

Construction sites required to comply with stormwater discharge requirements

### What?

A guide to help you develop a good Stormwater Pollution Prevention Plan (SWPPP)

### Why?

Stormwater runoff from construction sites can cause significant harm to our rivers, lakes, and coastal waters

A SWPPP is required (by your construction general permit) and will help you prevent stormwater pollution

A SWPPP is more than just a sediment and erosion control plan.
It describes all the construction site operator's activities to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act

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## Purpose of this Guidance Document

This document provides guidance to construction site operators that need to prepare a SWPPP in order to receive NPDES permit coverage for their stormwater discharges. The Clean Water Act provisions, EPA regulations and EPA's Construction General Permit described in this document contain legally binding requirements. This document does not substitute for those provisions, regulations or permit, nor is it a regulation or permit itself. It also does not substitute for requirements under State law or construction general permits issued by States. It does not impose legally-binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and State decisionmakers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular construction site will be made based on the applicable statutes, regulations and/or permit terms. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA—or the applicable NPDES permitting authority—will consider whether or not the recommendations or interpretations in the guidance are appropriate in that situation based on the law and regulations.

This guidance document occasionally uses language describing mandatory requirements for construction site operators and those covered by a general permit for stormwater discharges from such sites. This language is generally intended to reflect requirements applicable where EPA is the NPDES permitting authority. Although requirements in jurisdictions where EPA is not the permitting authority may resemble these requirements, the reader should not assume that this guidance accurately describes those requirements. Rather, the reader should consult the applicable regulations and any applicable NPDES permit.

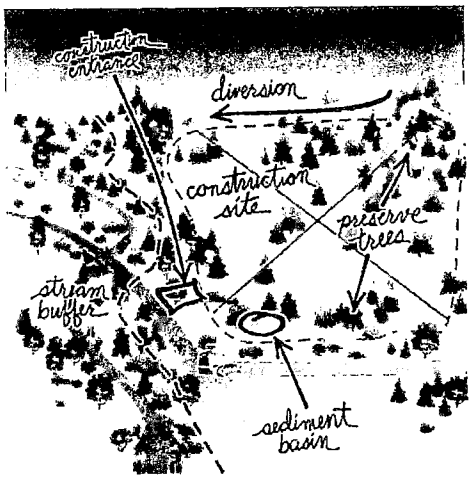
# Contents

## *What is a Stormwater Pollution Prevention Plan (SWPPP)?*

**A SWPPP may be called many things. Your state may use terms like:**

- **Construction Best Practices Plan**
- **Sediment and Stormwater Plan**
- **Erosion, Sediment, and Pollution Prevention Plan**
- **Construction Site Best Management Practices Plan**
- **Erosion Control Plan and Best Management Practices**
- **Best Management Practices Plan**
- **Erosion and Sediment Control Plan**

**Regardless of the title used in your state, these documents—and the stormwater permits that require them—tend to have many common elements. This guide is intended to help you develop a better SWPPP for your construction site.**




**Example sketch identifying various points to address in the SWPPP.**

# How to Use This Guide

- This guide was developed as a helpful reference guide for construction site operators across the country. We have tried to accommodate the wide range of knowledge and experience about stormwater pollution prevention that currently exists among operators—from novice to expert.
  - If you are relatively new to managing stormwater at a construction site, you will probably want to read this entire guide.
  - If you are very experienced and familiar with the requirements in your state, this guide may help you brush up on certain requirements or provide you with ideas to improve your SWPPP. You might want to review the table of contents and skip around. Be sure to take a look at the SWPPP template (Appendix A) to see if you can make improvements in the way you develop and maintain your SWPPP.

- This guide is written in a general format and can be used at most construction sites in any state, territory, or in Indian country. The document assumes that you will obtain discharge authorization under an appropriate National Pollutant Discharge Elimination System (NPDES) construction general permit and use both the permit and this guidance to assist in developing your SWPPP. In this guide, we make some references to the U.S. Environmental Protection Agency's Construction General Permit for illustrative purposes. **You should always consult your applicable NPDES permit for the exact requirements that apply to you.**

- Remember that you are developing your SWPPP for both your use and for review by the regulatory agencies responsible for overseeing your stormwater controls. As such, one of your goals in developing your SWPPP should be to present the information in a way that clearly demonstrates that it meets all the requirements of your NPDES permit.

- You can obtain an electronic copy of this guide (PDF format), the SWPPP template, and inspection form (in Microsoft Word) at **www.epa.gov/npdes/swpppguide**

# Chapter 1: **Introduction**

▶ This chapter provides an orientation to this guide and its contents and describes why stormwater controls at construction sites are necessary.

## A. Why Should You Use this Guide?

If you are responsible for erosion and sediment control and stormwater management at a permitted construction site, then this guide may be useful to you. This guide is designed to walk you through the steps for developing and implementing an effective stormwater pollution prevention plan (SWPPP). The basic outline of the guide is presented below:

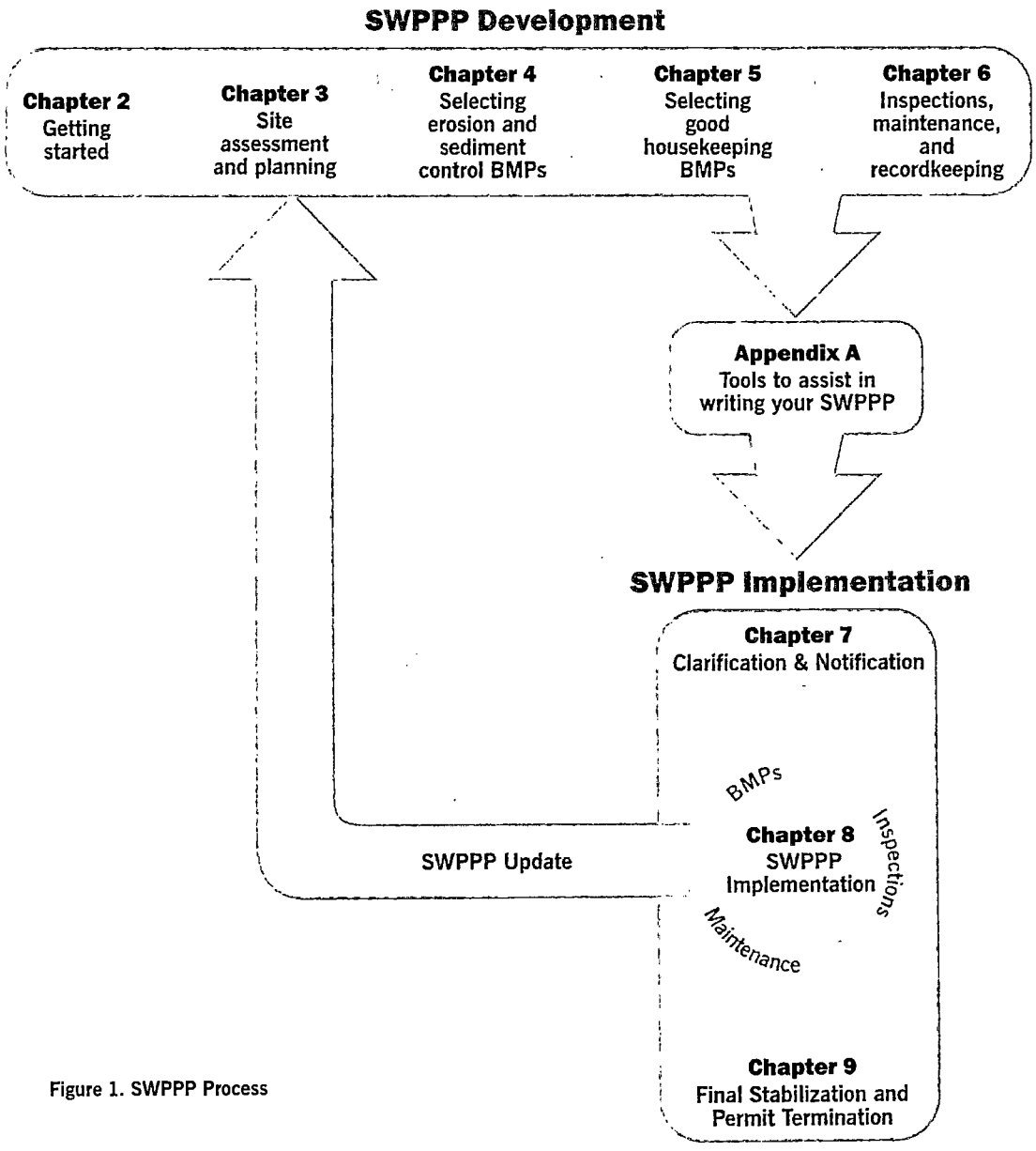



Figure 1. SWPPP Process

## *Take a Closer Look...*

What is a SWPPP?

A SWPPP is a site-specific, written document that:

- Identifies potential sources of stormwater pollution at the construction site
- Describes practices to reduce pollutants in stormwater discharges from the construction site. Reduction of pollutants is often achieved by controlling the volume of stormwater runoff (e.g., taking steps to allow stormwater to infiltrate into the soil).
- Identifies procedures the operator will implement to comply with the terms and conditions of a construction general permit

### *What does this mean to me?*

*Failure to implement your SWPPP could result in significant fines from EPA or a state environmental agency. Therefore, it is important that you develop your SWPPP to address the specific conditions at your site, fully implement it, and keep it up-to-date to reflect changes at your site.*

## B. What Is Stormwater Runoff and What Are Its Impacts?

Stormwater runoff is rain or snowmelt that flows over land and does not percolate into the soil. Stormwater runoff occurs naturally, in small amounts, from almost any type of land surface, especially during larger storm events. Impervious surfaces, such as buildings, homes, roads, sidewalks, and parking lots, can significantly alter the natural hydrology of the land by increasing the volume, velocity, and temperature of runoff and by decreasing its infiltration capacity. Increasing the volume and velocity of stormwater runoff can cause severe stream bank erosion, flooding, and degrade the biological habitat of these streams. Reducing infiltration can lower ground water levels and affect drinking water supplies.

**SWPPP Tip!**

*A SWPPP can have different names*

A SWPPP may also be called a *"construction best practices plan," "sediment and stormwater plan," "erosion, sedimentation, and pollution prevention plan,"* or similar term. The SWPPP (or similarly named plan) is generally required to comply with EPA's or the state's stormwater construction general permit.

In addition, as stormwater runoff moves across surfaces, it picks up trash, debris, and pollutants such as sediment, oil and grease, pesticides and other toxics. Changes in ambient water temperature, sediment, and pollutants from stormwater runoff can be detrimental to aquatic life, wildlife, habitat, and human health. Soil exposed by construction activities is especially vulnerable to erosion. Runoff from an unstabilized construction site can result in the loss of approximately 35–45 tons of sediment per acre each year (ASCE and WFF, 1992). Even during a short period of time, construction sites can contribute more sediment to streams than would be deposited naturally over several decades. Excess sediment can cloud the water reducing the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways.

The primary stormwater pollutant at a construction site is sediment. To control erosion at a construction site, it is important to understand the different types of erosion that can occur. Erosion begins when raindrops break down the soil structure and dislodge soil particles. Runoff carrying the soil particles becomes sheet erosion which eventually forms smaller rills and larger gullies. The best way to stop erosion is to keep the soil in place through vegetation, erosion control blankets, or other methods that prevent the soil from becoming dislodged during rain events.

The erosion process is typically influenced by climate, topography, soils, and vegetative cover. Understanding how these factors influence erosion will help you select and design appropriate controls to minimize erosion from your construction site.

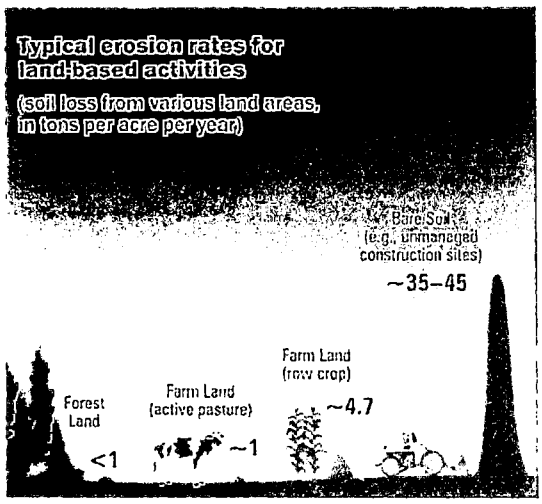



**Figure 2. Typical erosion rates from land-based activities.** (Dunne, T. and L. Leopold, 1978; NRCS, 2000; NRCS, 2006; ASCE and WEF, 1992)

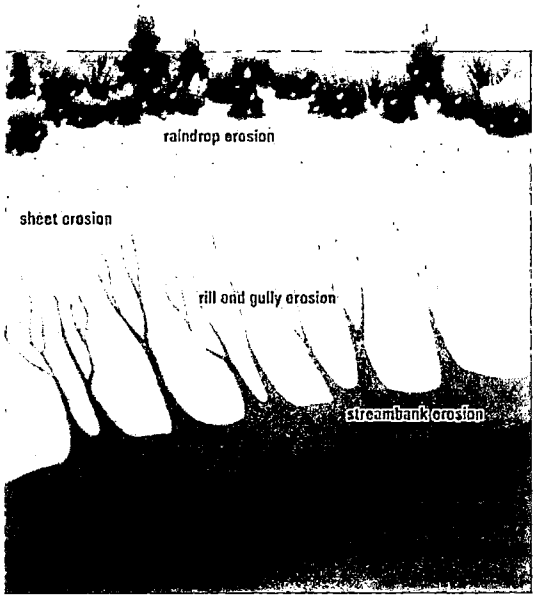



**Figure 3. Types of erosion.**

**Raindrop erosion**
*Dislodging of soil particles by raindrops*

**Sheet erosion**
*The uniform removal of soil without the development of visible water channels*

**Rill erosion**
*Soil removal through the formation of concentrated runoff that creates many small channels*

**Gully erosion**
*The result of highly concentrated runoff that cuts down into the soil along the line of flow*

**Streambank erosion**
*Flowing water that erodes unstable streambanks*

***Climate.*** The frequency, intensity, and duration of rainfall are the principal factors influencing erosion from a construction site. Know the weather patterns in your area and, if possible, plan your soil disturbance activities for periods of historically lower rainfall.

***Topography.*** The longer and steeper a slope, the greater the potential there is for erosion from that slope. Use practices such as diversions or fiber rolls to break up long slopes. Consider minimizing soil disturbance activities on steeper slopes.

***Soils.*** Soil type can also impact erosion. Soil texture, structure, organic matter content, compaction, and permeability can all influence erosion rates.

***Vegetative cover.*** Vegetative cover provides a number of critical benefits in preventing erosion—it absorbs the energy of raindrops, slows velocity of runoff, increases infiltration, and helps bind the soil. Soil erosion can be greatly reduced by maximizing vegetative cover at a construction site.

## C. How Can Construction Site Operators Prevent Stormwater Pollution?

**An effective SWPPP is the key!** If sediment and erosion controls and good housekeeping practices are not followed, construction activity can result in the discharge of significant amounts of sediment and other pollutants. The term *Best Management Practices* or BMPs is often used to describe the controls and activities used to prevent stormwater pollution.

**SWPPP Tip!**

### *Erosion versus Sedimentation*

Erosion is the process by which the land surface is worn away by the action of water or wind. Sedimentation is the movement and settling out of suspension of soil particles. It is usually easier and less expensive to prevent erosion than it is to control sediment from leaving a construction site.

BMPs can be divided into two categories—structural and non-structural BMPs. Structural BMPs include silt fences, sedimentation ponds, erosion control blankets, and temporary or permanent seeding, while non-structural BMPs include picking up trash and debris, sweeping up nearby sidewalks and streets, maintaining equipment, and training site staff on erosion and sediment control practices. In this document, the term "BMPs" is used broadly and includes both structural and non-structural controls and practices.

**A SWPPP is more than just a sediment and erosion control plan.** Most SWPPPs are written documents that describe the pollution prevention practices and activities that will be implemented on the site. It includes descriptions of the site and of each major phase of the planned activity, the roles and responsibilities of contractors and subcontractors, and the inspection schedules and logs. It is also a place to document changes and modifications to the construction plans and associated stormwater pollution prevention activities.

# Chapter 2: **Getting Started**

▶ **This chapter describes some of the basic things you'll want to determine (Do you need permit coverage? What permit applies to you?), as well as some of the materials and information you may need to develop your SWPPP. Collecting this information before you start will help you develop your SWPPP more efficiently. Keep in mind that you may also need to gather this information and develop your SWPPP before you complete your Notice of Intent (NOI) and file for permit coverage (note that filing an NOI is not discussed until Chapter 7).**

## A. What Are the Federal Requirements for Stormwater Runoff from Construction Sites?

The Clean Water Act and associated federal regulations (Title 40 of the *Code of Federal Regulations* [CFR] 123.25(a)(9), 122.26(a), 122.26(b)(14)(x) and 122.26(b)(15)) require nearly all construction site operators engaged in clearing, grading, and excavating activities that **disturb one acre or more, including smaller sites in a larger common plan of development or sale,** to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) permit for their stormwater discharges. Under the NPDES program, the U.S. Environmental Protection Agency (EPA) can authorize states to implement the federal requirements and issue stormwater permits. Today, most states are authorized to implement the NPDES program and issue their own permits for stormwater discharges associated with construction activities.

**SWPPP Tip!**

***Don't forget about "common plans of development or sale"***

A *common plan of development or sale* includes larger-scale plans for land development to be carried out by one or more entities. Examples include housing developments and subdivisions, industrial parks, and commercial developments.

EPA has described this term in the fact sheet accompanying its Construction General Permit as including: any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.), or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot. Each permitting authority may review documentation to determine if common plan requirements apply.

Each state (or EPA, in the case of states that are not authorized) issues one or more NPDES construction general permits. These permits, generally, can be thought of as umbrella permits that cover all stormwater discharges associated with construction activity in a given state for a designated time period, usually 5 years. Operators of individual constructions sites then apply for coverage under this permit. *Before applying for permit coverage, you should read and understand all the provisions of the appropriate construction general permit and develop a SWPPP.* **Because authorized states develop their own NPDES requirements, you should carefully read your state's construction general permit and follow the specific instructions it contains.**

***Take a Closer Look...***

### EPA Permits vs. State-Issued Permits

At the time of publication, EPA was the NPDES permitting authority in Massachusetts, New Hampshire, New Mexico, Idaho, Alaska, the District of Columbia, Puerto Rico, the U.S. territories (except the Virgin Islands), most Indian country lands, and for federal facilities in four states. For an up-to-date list of NPDES permitting authorities, visit **www.epa.gov/npdes/stormwater/construction** or **www.cicacenter.org/swrl.html**

***What does this mean to me?***

*Because EPA and state-issued permits can be different, you should make sure you read and apply for the correct permit. Use the links on either of the web sites listed to the left to determine which agency issues NPDES permits where your construction activity will occur.*

Most construction general permits contain similar elements:

- Applicability—describes the geographic area covered and who is eligible to apply
- Authorization—describes the types of stormwater (and non-stormwater) discharges that are covered
- SWPPP requirements—outlines the elements that should to be addressed to prevent the contamination of stormwater runoff leaving the construction site
- Application—includes instructions for obtaining permit coverage, usually by filing an application or Notice of Intent (NOI) form
- Implementation—BMP installation, inspection, and maintenance requirements
- Other requirements—may include additional requirements such as spill prevention
- Standard conditions—list of conditions that are applicable to most NPDES permits
- Termination—lists conditions for terminating permit coverage after construction is complete

## What Construction Activities Require NPDES Permit Coverage?

In this document, "*construction*" refers to actions that result in a disturbance of the land, including clearing, grading, excavating, and other similar activities. It also includes "*construction-related activities,*" areas that support the construction project such as stockpiles, borrow areas, concrete truck washouts, fueling areas, material storage areas and equipment storage areas.

Construction activities that do not disturb land, such as interior remodeling, generally do not require NPDES permit coverage.

## Are There Situations Where a Permit Is Not Needed?

Generally, permit coverage is not required for activities that are considered routine maintenance, such as landscaping, road maintenance, and maintaining stormwater BMPs. Some states and EPA offer the option of a waiver for small sites (disturbing less than 5 acres) in areas and times of the year with low predicted rainfall. To be eligible for the waiver, you would have to meet the requirements specified in the regulations.

## Local Requirements

Operators of construction sites should keep in mind that local governments (cities, towns, counties) often have their own requirements for construction sites (e.g., local permits for grading, sediment and erosion, utilities). **Compliance with local requirements does not mean compliance with federal NPDES requirements or vice versa, unless the authorized state agency or EPA has specifically designated the local program a *qualifying local program.***

## Qualifying Local Programs

In some states, the NPDES permitting agency has identified certain local construction stormwater control programs that have requirements that are equivalent or more protective than the state's requirements. If one of these local stormwater programs has been designated by the permitting agency as a *qualifying local program*, the construction site operator may simply read and follow the local requirements. The permitting agency (state or EPA) might choose to waive the requirement to file a Notice of Intent (NOI) or similar application form for small construction sites operating within the jurisdiction of a qualifying local program. If waived, these sites would be covered under the appropriate construction general permit automatically. Check your construction general permit carefully.

The NPDES permitting authority must identify any qualifying local programs in the construction general permit. Violations of the local requirements are also considered violations of the NPDES requirements and may be enforced accordingly.

**SWPPP Tip!**

### Read Your General Permit!

You should thoroughly read and understand the requirements in your general permit. This includes requirements on eligibility (whether your site qualifies for the general permit), application (how to notify EPA or the state that you'd like to be covered by the general permit), SWPPPs, and termination (stabilizing your site and notifying EPA or the state that your project is complete). By applying for coverage under the general permit, you are telling EPA or your state that you will comply with the permit's requirements, so read your permit carefully!

## B. Who Is Required to Get NPDES Permit Coverage?

Construction site *operators* are responsible for obtaining NPDES permit coverage for their stormwater discharges. Each state has its own definition of the term *operator.* Operators may include owners (e.g., developers), general contractors, independent subcontractors, government officials, companies, or corporations. This section reflects EPA's understanding of most NPDES permit requirements for stormwater discharges throughout the country. You should, of course, consult your construction general permit for the requirements that apply to you. In some cases, states have defined the operator as a single entity, usually the land owner or easement holder. In other states, several entities may meet the definition of operator. For instance, the owner may control the project's plans and specifications, and the general contractor may control the site's day-to-day operations. In such cases, both may be defined as operators. If a site has multiple operators, they may cooperate on the development and implementation of a single SWPPP. Operators generally obtain coverage under an NPDES permit, often by filing a form called a Notice of Intent (NOI).


**Figure 4. Use signage to help educate construction staff.**

EPA's Construction General Permit (which applies only where EPA is the permitting authority—see Chapter 2 Section A) defines operator as any party that:

- Has control over the construction plans and specifications

  and/or

- Has day-to-day operational control of the site, including activities necessary to implement the SWPPP

Regardless of whether or not the operator is a corporation or governmental entity, someone must direct the SWPPP's preparation and implementation and apply for NPDES permit coverage for the stormwater discharges. In most cases, this will be a high-level official, such as a corporate officer, manager or elected official, or a principal executive officer. For specific instructions, refer to the appropriate NPDES stormwater permit.

### *Multiple Operators*

In many instances, there may be more than one party at a site performing tasks related to *operational control* and more than one operator may need to submit an NOI. Depending on the site and the relationship between the parties (e.g., owner, developer, general contractor), there can either be a single party acting as site operator and consequently responsible for obtaining permit coverage, or there can be two or more operators all needing permit coverage. Exactly who is considered an operator is largely controlled by how the *owner* of the project chooses to structure the contracts with the *contractors* hired to design and/or build the project. The following are three general operator scenarios (variations on any of these three are possible, especially as the number of owners and contractors increases):

- *Owner as sole permittee.* The property owner designs the structures for the site, develops and implements the SWPPP, and serves as general contractor (or has an on-site representative with full authority to direct day-to-day operations). The owner may be the only party that needs permit coverage under these circumstances. Everyone else on the site may be considered subcontractors and might not need permit coverage.

- *Contractor as sole permittee.* The property owner hires one company (i.e., a contractor) to design the project and oversee all aspects of the construction project, including preparation and implementation of the SWPPP and compliance with the permit (e.g., a *turnkey* project). Here, the contractor would likely be the only party needing a permit. It is under this scenario that an individual having a personal residence built for his own use (e.g., not those to be sold for profit or used as rental property) would not be considered an operator. However, individual property owners would meet the definition of *operator* and may require permit coverage if they perform general contracting duties for construction of their personal residences.
- *Owner and contractor as co-permittees.* The owner retains control over any changes to site plans, SWPPPs, or stormwater conveyance or control designs; but the contractor is responsible for overseeing actual earth disturbing activities and daily implementation of SWPPP and other permit conditions. In this case, which is the most common scenario, both parties may need to apply for permit coverage.

However, you are probably not an operator and subsequently would not need permit coverage if one of the following is true:

- You are a subcontractor hired by, and under the supervision of, the owner or a general contractor (i.e., if the contractor directs your activities on-site, you probably are not an operator)
- The operator of the site has indicated in the SWPPP that someone other than you (or your subcontractor) is reponsible for your activities as they relate to stormwater quality (i.e., another operator has assumed responsibility for the impacts of your construction activities). This is typically the case for many, if not most, utility service line installations.

In addition, *owner* typically refers to the party that owns the structure being built. Ownership of the land where construction is occurring does not necessarily imply the property owner is an operator (e.g., a landowner whose property is being disturbed by construction of a gas pipeline). Likewise, if the erection of a structure has been contracted for, but possession of the title or lease to the land or structure does not to occur until after construction, the would-be owner may not be considered an operator (e.g., having a house built by a residential homebuilder).

### Transferring Ownership

In many residential developments, an overall developer applies for the stormwater permit coverage, conducts grading activities, and installs the basic infrastructure (e.g., utilities, roads). Individual lots are then sold to builders who then construct the houses. Unless the developer is still responsible for stormwater on these individual lots (which is typically not the case), it is likely that the builder will need to apply for NPDES permit coverage for stormwater discharges during home construction.

### Subcontractors

It is typically a good idea to include specific contract language requiring subcontractors to implement appropriate stormwater controls. Subcontractors should be trained on appropriate BMPs and requirements in the SWPPP and should not disturb or remove BMPs. Some contractors will include specific penalties in subcontractor agreements to ensure subcontractors do not damage or remove BMPs.

### Take a Closer Look . . .

**Erosion Control vs. Sediment Control**

When developing a SWPPP, it is important to understand the difference between erosion control and sediment control. Erosion control measures (e.g., mulch, blankets, mats, vegetative cover) protect the soil surface and prevent soil particles from being dislodged and carried away by wind or water. Sediment control measures remove soil particles after they have been dislodged (typically through settling or filtration). It is usually easier and less expensive to prevent erosion than it is to control sedimentation.

#### What does this mean to me?

*You should try to use erosion control BMPs as the primary means of preventing stormwater contamination, and sediment control techniques to capture any soil that does get eroded. Because no one technique is 100 percent effective, a good SWPPP will use both kinds of BMPs in combination for the best results.*

## C. What Elements Are Required in a SWPPP?

The SWPPP lays out the steps and techniques you will use to reduce pollutants in stormwater runoff leaving your construction site. Therefore, proper development and implementation of your SWPPP is crucial. First and foremost, your SWPPP must be developed and implemented consistent with the requirements of the applicable NPDES stormwater construction permit. The following discussion describes requirements that are contained in most of these permits.

Your SWPPP is used to identify all potential pollution sources that could come into contact with stormwater leaving your site. It describes the BMPs you will use to reduce pollutants in your construction site's stormwater discharges, and it includes written records of your site inspections and the follow-up maintenance that is performed.

Your SWPPP should contain the following elements:

- Cover/title page
- Project and SWPPP contact information
- Site and activity description, including a site map
- Identification of potential pollutant sources
- Description of controls to reduce pollutants
- Maintenance/inspection procedures
- Records of inspections and follow-up maintenance of BMPs
- SWPPP amendments
- SWPPP certification

Chapters 3–6 of this guide describe how to develop a SWPPP—from site evaluation and data collection to selecting appropriate BMPs and assigning maintenance and inspection responsibilities.

## D. SWPPP Roles and Responsibilities

The operator has the lead for developing and implementing the SWPPP and commiting resources to implement the BMPs. Stormwater pollution control is typically the job of more than a single person; the SWPPP development process provides a good opportunity to define roles and responsibilities of everyone involved. Roles and responsibilities are to be documented clearly in the SWPPP and subcontractor agreements as necessary. Your SWPPP should describe:

- Who is on the stormwater pollution prevention team?
- Who will install structural stormwater controls?
- Who will supervise and implement good housekeeping programs, such as site cleanup and disposal of trash and debris, hazardous material management and disposal, vehicle and equipment maintenance, and so on?
- Who will conduct routine inspections of the site to ensure all BMPs are being implemented and maintained?
- Who will maintain the BMPs?
- Who is responsible for documenting changes to the SWPPP?
- Who is responsible for communicating changes in the SWPPP to people working on the site?

When you apply for your stormwater permit, the application may ask for a SWPPP contact. This could be the construction site operator, but in many cases it's a staff person (e.g., project superintendent, field manager, construction manager, stormwater compliance officer) at the construction site who is responsible for conducting inspections, ensuring BMPs are installed and maintained, and updating the SWPPP when necessary.

**SWPPP Tip!**

### *Erosion Control Certification*

Several programs promote the training and certification of individuals in erosion and sediment control. Some states have developed certification programs and require construction sites to have a certified individual on-site at all times. The Soil and Water Conservation Society and the International Erosion Control Association sponsor a national certification program, the Certified Professional in Erosion and Sediment Control (**www.cpesc.org**)

## E. Common SWPPP Objectives

The SWPPP outlines the steps you will take to comply with the terms and conditions of your construction general permit. Keeping the following objectives in mind as you develop your SWPPP will help guide you in addressing your permit requirements and in protecting water quality.

- *Stabilize the site as soon as possible.* Get your site to final grade and either permanently or temporarily stabilize all bare soil areas as soon as possible. Take into consideration germination times for the grasses or other vegetation selected, and provide additional stabilization (mulches, matrices, blankets, soil binders) on erosion-prone areas such as slopes and drainage ways. Also consider seasonal limitations to plant establishment and growth, such as drought or cold temperatures, and make an effort to ensure that areas that are not showing adequate vegetation establishment are reseeded or mulched immediately. Areas needed for future roads, construction, or other purposes should be temporarily stabilized (see your permit for requirements related to areas of the site not currently under active construction). Establishing a vegetated cover on as much of the site as possible will help to minimize erosion and sediment problems. Perimeter controls should remain in place until final stabilization has been achieved.
- *Protect slopes and channels.* Convey concentrated stormwater runoff around the top of slopes and stabilize slopes as soon as possible. This can be accomplished using pipe slope drains or earthen berms that will convey runoff around the exposed slope. Avoid disturbing natural channels and the vegetation along natural channels, if possible.
- *Reduce impervious surfaces and promote infiltration.* Reducing impervious surfaces will ultimately reduce the amount of runoff leaving your site. Also, divert runoff from rooftops and other impervious surfaces to vegetated areas when possible to promote infiltration.
- *Control the perimeter of your site.* Divert stormwater coming on to your site by conveying it safely around, through, or under your site. Avoid allowing run-on to contact disturbed areas of the construction site. For the runoff from the disturbed areas of the site, install BMPs such as silt fences to capture sediment before it leaves your site. Remember—"Divert the clean water, trap the dirty water."
- *Protect receiving waters adjacent to your site.* Erosion and sediment controls are used around the entire site, but operators should consider additional controls on areas that are adjacent to receiving waters or other environmentally sensitive areas. **Remember, the primary purpose of erosion and sediment controls is to protect surface waters.**
- *Follow pollution prevention measures.* Provide proper containers for waste and garbage at your site. Store hazardous materials and chemicals so that they are not exposed to stormwater.
- *Minimize the area and duration of exposed soils.* Clearing only land that will be under construction in the near future, a practice known as construction phasing, can reduce off-site sediment loads by 36 percent for a typical subdivision (Claytor 2000). Additionally, minimizing the duration of soil exposure by stabilizing soils quickly can reduce erosion dramatically.

### *Take a Closer Look...*

**Incentives to preserve open space**

It should be the goal of every construction project to, where possible, preserve open space and minimize impervious surfaces through practices such as clustering houses. Open space preservation can provide significant water quality and economic benefits to property owners.

#### *What does this mean to me?*

*From a marketing perspective, studies have shown that lots abutting forested or other open space are initially valued higher than lots with no adjacent open space, and over time their value appreciates more than lots in conventional subdivisions (Arendt 1996). For example, lots in an open space subdivision in Amherst, Massachusetts, experienced a 13 percent greater appreciation in value over a comparable conventional development after 20 years even though the lots in the conventional development were twice as large (Arendt 1996).*

# Chapter 3: SWPPP Development—Site Assessment and Planning

▶ **The first step in developing a SWPPP is assessing the site and identifying measures to protect natural features.**

This chapter describes a number of steps that will help provide a good foundation for your SWPPP, including:

- Assessing current conditions at the site
- Establishing pollution prevention and water quality protection goals for your project
- Developing a framework to help you meet those goals

## A. Assess Your Site and Proposed Project

The first step in developing your SWPPP is to evaluate your proposed construction site. Your SWPPP should describe the undeveloped site and identify features of the land that can be incorporated into the final plan and natural resources that should be protected. Understanding the hydrologic and other natural features of your site will help you develop a better SWPPP and, ultimately, to more effectively prevent stormwater pollution.

**SWPPP Tip!**

*A SWPPP is a detailed plan that:*

- Identifies potential sources of stormwater pollution
- Describes the practices that will be used to prevent stormwater pollution. These should include: erosion and sediment control practices, good housekeeping practices, conservation techniques, and infiltration practices (where appropriate), and
- Identifies procedures the operator will implement to comply with all requirements in the construction general permit

### *Visit the Site*

The people responsible for site design and drafting the SWPPP should conduct a thorough walk-through of the entire construction site to assess site-specific conditions such as soil types, drainage patterns, existing vegetation, and topography. Avoid copying SWPPPs from other projects to save time or money. Each construction project and SWPPP is unique, and visiting the site is the only way to create a SWPPP that addresses the unique conditions at that site.

### *Assess Existing Construction Site Conditions*

Assess the existing conditions at the construction site, including topography, drainage, and soil type. This assessment, sometimes called *fingerprinting* (see text box on page 11) is the foundation for building your SWPPP and for developing your final site plan. In this assessment, use or create a topographic drawing that:

- Indicates how stormwater currently drains from the site, and identify the location of discharge points or areas
- Identifies slopes and slope lengths. The topographic features of the site are a major factor affecting erosion from the site
- Identifies soil type(s) and any highly erodible soils and the soil's infiltration capacity
- Identifies any past soil contamination at the site
- Identifies natural features, including trees, streams, wetlands, slopes and other features to be protected

## Take a Closer Look...

Fingerprinting Your Site

When you evaluate your construction site, you should clearly identify vegetation, trees, and sensitive areas, such as stream buffers, wetlands, highly erodible soils, and steep slopes at your site. You should protect these areas from disturbance. Inventorying a site's natural features is a technique called fingerprinting. Fingerprinting identifies natural features that you can protect from clearing and heavy equipment by signage or physical barriers.

### *What does this mean to me?*

*Fingerprinting your site will help ensure that you don't damage natural features such as waterways or wetlands. Conducting construction activity in a waterway or wetland without the proper permits can result in significant penalties.*

In most cases, the site designer can compile all this information on a digitized drawing that can then be adapted to show the planned construction activity, the phases of construction, and the final site plan.

Topographic maps are readily available on the Internet (e.g., **www.terraserver.com** or **www.mapquest.com**) or by contacting the U.S. Geological Survey store (**http://store.usgs.gov**). If you need help determining your soil type, contact your local Natural Resource Conservation Service (NRCS) office or extension service office. To find the NRCS office nearest to your site, visit the U.S. Department of Agriculture's Service Center Locator website (**http://offices.sc.egov.usda.gov/locator/app**). Soil information is also available online from NRCS (**http://soils.usda.gov**).

### Identify Receiving Waters, Storm Drains, and Other Stormwater Conveyance Systems

Your SWPPP should clearly identify the receiving waters and stormwater systems through which stormwater from your site could flow. Many states require planning for a specific storm event or storm events. These storm events are referred to by their recurrence interval and duration such as 1-year, 6-hour storm or a 100-year, 24-hour storm. These events then translate into a specific rainfall amount depending on average conditions in your area.

If your site's stormwater flows into a municipal storm drain system, you should determine the ultimate destination of that system's discharge. This may be obvious and easy to document. However, in some systems, you may have to consult with the local agency responsible for the storm drain system to determine the waterbody to which you are discharging.

If your site's stormwater runs off to areas not connected to the storm drain system, you should consider your land's topography and then identify the waterbodies that it could reach. Many sites will discharge some stormwater to a storm drain system and some to other areas not connected to the system. If your site's stormwater could potentially reach two or more waterbodies, note that in your SWPPP. Remember, stormwater can travel long distances over roads, parking lots, down slopes, across fields, and through storm sewers and drainage ditches.

### Describe Your Construction Project

Your SWPPP should contain a brief description of the construction activity, including:

- Project type or function (for example, low-density residential, shopping mall, highway)
- Project location, including latitude and longitude
- Estimated project start and end dates
- Sequence and timing of activities that will disturb soils at the site
- Size of the project
- Estimated total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas
- Percentage of impervious area before and after construction

| Construction Site Pollutants | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Primary Pollutant | Other Pollutants | | | | | | | |
| Areas of Consideration | Sediment | Nutrients | Heavy metals | pH (acids & bases) | Pesticides & herbicides | Oil & grease | Bacteria & viruses | Trash, debris, solids | Other toxic chemicals |
| Clearing, grading, excavating, and unstabilized areas | ✓ | | | | | | | ✓ | |
| Paving operations | ✓ | | | | | | | ✓ | |
| Concrete washout and waste | | | ✓ | ✓ | | | | ✓ | |
| Structure construction/ painting/cleaning | | ✓ | | ✓ | | | | ✓ | ✓ |
| Demolition and debris disposal | ✓ | | | | | | | ✓ | |
| Dewatering operations | ✓ | ✓ | | | | | | | |
| Drilling and blasting operations | ✓ | | | ✓ | | | | ✓ | |
| Material delivery and storage | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Material use during building process | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Solid waste (trash and debris) | | | | | | | | ✓ | ✓ |
| Hazardous waste | | | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Contaminated spills | | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Sanitary/septic waste | | ✓ | | ✓ | | | ✓ | | ✓ |
| Vehicle/equipment fueling and maintenance | | | | | | ✓ | | | ✓ |
| Vehicle/equipment use and storage | | | | | | ✓ | | | ✓ |
| Landscaping operations | ✓ | ✓ | | | | | | ✓ | |

- Runoff coefficient[1] before and after construction
- Soil types
- Construction site location and any nearby waters or wetlands
- Describe and identify the location of other potential sources of stormwater contamination, such as asphalt and concrete plants, stucco operations, paint and concrete washout, and such

## *Identify Pollutants and Pollution Sources*

Identify the pollutants and sources that are likely to be found on the site. The principle pollutant of concern, of course, is sediment. There are, however, other pollutants that may be found, usually in substantially smaller amounts, in stormwater runoff from construction sites. These can include nutrients, heavy metals, organic compounds, pesticides, oil and grease, bacteria and viruses, trash and debris, and other chemicals. After identifying the pollutants and sources, be as specific as possible in your SWPPP about the BMPs you will use to address them. The table at the left lists the sources of pollutants at construction sites, including sediment, the primary pollutant and other pollutants that may be present at construction sites.

**Figure 5. Make sure storm drain inlets are protected.**

[1]The runoff coefficient is the partial amount of the total rainfall which will become runoff. Runoff coefficients generally range from 0.95 (highly impervious) to 0.05 (vegetated surface that generates little runoff). For more information on calculating the runoff coefficient for your site, see Appendix C.

### Non-Stormwater Discharges

Most permits will require you to identify any non-stormwater discharges in your SWPPP. Certain non-stormwater discharges may be allowed under the terms and conditions of your permit, however, you should make every effort to eliminate these discharges where possible. You should identify these sources in your SWPPP and identify pollution prevention measures to ensure that pollutants are not introduced to these discharges and carried to nearby waterbodies.

EPA's CGP identifies these allowable non-stormwater discharges: discharges from fire-fighting activities, fire hydrant flushings, waters used to wash vehicles, buildings, and pavements where detergents are not used, water used to control dust, potable water (including uncontaminated water line flushings), uncontaminated air conditioning condensate, uncontaminated ground water or spring water, among others. The permit goes on to say that non-stormwater discharges should be eliminated or reduced to the extent feasible and that the SWPPP should identify and ensure the implementation of appropriate pollution prevention measures for these discharges. More discussion of pollution prevention measures for some of these non-stormwater sources can be found in Chapter 5.

### Permanent Stormwater Controls (Post-Construction)

The topic of designing, installing, and maintaining permanent or post-construction stormwater controls, although a requirement, is beyond the scope of this SWPPP guide. A SWPPP compiled in support of coverage under EPA's Construction General Permit, however, needs to include a description of all permanent stormwater controls that will be constructed along with the buildings, roads, parking lots, and other structures. You should incorporate sediment and erosion controls into your SWPPP for areas where permanent stormwater controls, such as wet ponds, swales, and bioretention cells are to be constructed.

Effectively managing stormwater over the long-term—long after the actual construction process is over—is a significant challenge. Many communities (and a few states) have or are developing comprehensive requirements to better manage permanent (or post-construction) stormwater runoff. To be most effective, you should consider integrating your design process for your permanent stormwater controls into your overall design for your site. Planning for your permanent stormwater controls could affect your decisions about site design, location of buildings and other structures, grading, and preserving natural features. By preserving natural drainage patterns, trees, native vegetation, riparian buffers, and wetlands, you might need to construct fewer or smaller structural stormwater controls to cope with runoff from your site. Permanent stormwater controls should be designed with two important goals in mind: (1) reduction of the volume and velocity of runoff, and (2) reduction of the pollutants in the stormwater that does leave your site.

Techniques, such as *Low Impact Development*, Better Site Design, or *Conservation Development*, which emphasize addressing stormwater where it falls, infiltrating it, preserving natural drainage patterns, and

## Take a Closer Look...

**Specimen Trees and Natural Vegetation**

Before a site plan is prepared, identify and clearly mark existing trees and vegetation you want to preserve. Some communities have tree preservation ordinances, and local extension service offices and foresters will often provide free advice on tree and plant preservation. Remember to notify all employees and subcontractors about trees and areas you intend to preserve and mark them clearly.

### What does this mean to me?

*Large trees and other native vegetation can represent significant value in the long term to property owners and the community at large. Many studies document that the presence of trees on residential and commercial sites provide many benefits including improved aesthetics, habitat for birds and other wildlife, and energy savings (shade) that ultimately enhance the economic value of the site. Trees also provide shade and act as windbreaks, which can reduce energy costs over the long term. By protecting existing trees, you can reduce landscaping costs and improve the appearance of a newly developed property. According to the National Arbor Day Foundation, trees around a home can increase its value by 15 percent or more.*

preserving natural vegetation offer the best opportunity to protect nearby rivers, lakes, wetlands, and coastal waters. **Incorporating these ideas and concepts into the design for your project before it is built also offers the opportunity to reduce capital infrastructure and long-term maintenance costs.**

At the neighborhood or even at the watershed scale, *Smart Growth* techniques can help us design neighborhoods that minimize impacts on water quality, reduce air pollution, and improve the general quality of life for residents. **In the *Resources* list in Appendix D, you will find a list of suggestions on this topic, including how to incorporate Smart Growth and Low Impact Development techniques into the design of your site.**

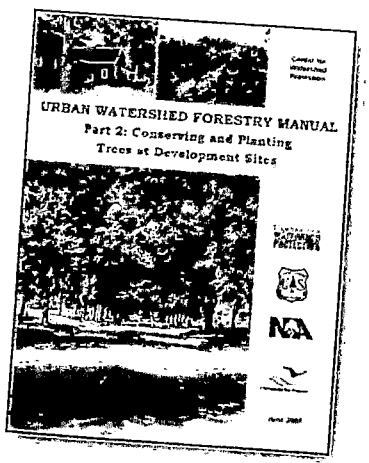
## B. Identify Approaches to Protect Natural Resources

Preservation of natural areas, waterbodies, and open space has numerous economic, aesthetic, community, and environmental benefits. Preservation efforts also often increase the value of lots and homes and help to reduce overall expenditures on infrastructure. Specifically, these kinds of conservation efforts can help to significantly reduce the volume and velocity of stormwater runoff and the pollutants that may be carried with it.

**SWPPP Tip!**

### *Tree Preservation Resources*

For more on tree preservation, contact your local extension service office or forester. Also, American Forests has useful information and tools at their website, **www.americanforests.org/resources/urbanforests**. The Center for Watershed Protection in cooperation with the U.S. Forest Service has developed a series of manuals on urban forestry. Part two, titled Conserving and Planting Trees at Development Sites will be of particular interest. You can find these manuals at www.cwp.org




### *Protect Nearby Waters*

Your SWPPP should describe how you will protect and preserve any streams, wetlands, ponds or other waterbodies that are on your property or immediately adjoining it. Riparian areas around headwater streams are especially important to the overall health of the entire river system. Many states and communities have buffer or shoreline protection requirements to preserve sensitive areas around waterbodies.

Many states apply special designations to high-value or high-quality waters. Check with your state water pollution control agency to determine if your project could discharge to *outstanding* or special protection waters (such as wetlands, or salmon and trout streams). You might be subject to additional requirements to protect these waterbodies.

Wetland areas, including bogs, marshes, swamps, and prairie potholes may be found in areas adjacent to rivers, lakes, and coastal waters but may also be found in isolated places far from other surface waters. Many types of wetlands are protected under the Clean Water Act and construction activities in and around these areas may require an additional permit from the Army Corps of Engineers. Construction site operators should make every effort to preserve wetlands and must follow applicable local, state, and federal requirements before disturbing them or the areas around them.

To ensure the protection of natural areas during the construction period, you should use a combination of techniques, including temporary fencing, signage, and educating staff and subcontractors.

### *Assess Whether Your Project Impacts an Impaired Waterbody*

Under the Clean Water Act, states are required to determine if rivers, lakes, and other waters are meeting water quality standards. When a waterbody does not meet water quality standards because of one or more sources of pollution, the state lists the water as impaired. When a water is determined to be impaired, the state or EPA develops a plan for correcting the situation. This plan is called a Total Maximum Daily Load (TMDL). If stormwater from your project could reach an impaired water with or without an approved TMDL (either directly or indirectly through a municipal storm drain system), your permit

may include additional requirements to ensure that your stormwater discharges do not contribute to that impairment and your stormwater controls are consistent with plans to restore that waterbody. Your SWPPP should describe the specific actions you will take to comply with these permit requirements for impaired waters.

You should determine, before you file for permit coverage, if the receiving waters for your project are impaired and if so, whether a TMDL has been developed for this waterbody. Visit EPA's Enviromapper website (**www.epa.gov/waters/enviromapper**) or contact your state environmental agency for more information.

### *Assess Whether You Have Endangered Plant or Animal Species in Your Area*

**The federal Endangered Species Act protects endangered and threatened species and their critical habitat areas.** (States and tribes may have their own endangered species laws.) In developing the assessment of your site, you should determine whether listed endangered species are on or near your property. Critical habitat areas are often designated to support the continued existence of listed species. You should also determine whether critical habitat areas have been designated in the vicinity of your project. Contact your local offices of the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), or your state or tribal heritage centers. These organizations often maintain lists of federal and state listed endangered and threatened species on their Internet sites. For more information and to locate lists for your state, visit **www.epa.gov/npdes/endangeredspecies**

Additionally, your state's NPDES stormwater permit may specifically require that you address whether the activities and the stormwater discharged by your construction site have the potential to adversely affect threatened or endangered species or the critical habitat areas. You might need to conduct a biological investigation or assessment and document the results of the assessment in your SWPPP. The state may reference federal, state, or tribal endangered species protection laws or regulations.

EPA's Construction General Permit contains detailed procedures to assist construction site operators in determining the likely impact of their projects on any endangered species or critical habitat. Construction site operators in areas covered by EPA's Construction General Permit are required to assess the impact of their activities and associated stormwater discharges on species and habitat in the "project area" which may extend beyond the site's immediate footprint.

### *Assess Whether You Have Historic Sites that Require Protection*

The National Historic Preservation Act, and any state, local and tribal historic preservation laws, apply to construction activities. As with endangered species, some permits may specifically require you to assess the potential impact of your stormwater discharges on historic properties. However, whether or not this is stated as a condition for permit coverage, the National Historic Preservation Act and any applicable state or tribal laws apply to you. Contact your State Historic Preservation Officer (**www.ncshpo.org/stateinfolist/fulllist.htm**) or your Tribal Historic Preservation Officer (**grants.cr.nps.gov/thpo/tribaloffices.cfm**).

## C. Develop Site Maps

The final step in the site evaluation process is to document the results of your site assessment and your planned phases of construction activity on a detailed site map or maps. This includes developing site maps showing planned construction activities and stormwater practices for the various major stages of construction, protected areas, natural features, slopes, erodible soils, nearby waterbodies, permanent stormwater controls, and so on. You must keep your SWPPP and your site maps up-to-date to reflect changes at your site during the construction process.

### *Location Maps*

A general location map is helpful to identify nearby, but not adjacent, waterbodies in proximity to other properties. You can use any easily available maps or mapping software to create a location map.

### *Site Maps*

The detailed construction site maps should show the entire site and identify a number of features at the site related to construction activities and stormwater management practices.

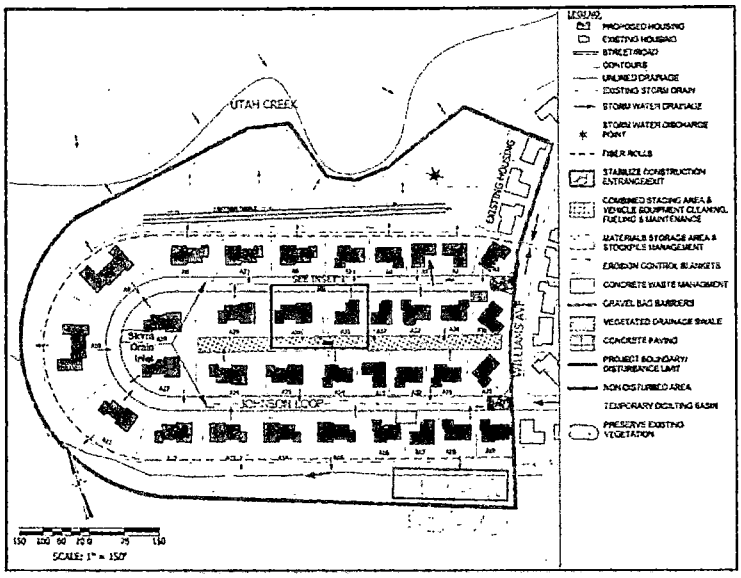



Figure 6. Example site map.

***Map of undeveloped or existing site.*** For many sites, a map of the undeveloped or existing site, noting the features that you identified in Section A of this Chapter, will help you develop your SWPPP and identify current site features that you want to preserve. On this map note current drainage patterns, storm drains, slopes, soil types, waters and other natural features. Also note any existing structures, roads, utilities, and other features.

***Map or series of maps for construction plans.*** Site maps should show the construction activities and stormwater management practices for each major phase of construction (e.g., initial grading, infrastructure, construction, and stabilization). The site maps should legibly identify the following features:

- Stormwater flow and discharges. Indicate flow direction(s) and approximate slopes after grading activities, as well as locations of discharges to surface waters or municipal storm drain systems.
- Areas and features to be protected. Include wetlands, nearby streams, rivers, lakes, and coastal waters, mature trees and natural vegetation, steep slopes, highly erodible soils, etc.
- Disturbed areas. Indicate locations and timing of soil disturbing activities (e.g. grading). Mark clearing limits.
- BMPs. Identify locations of structural and non-structural BMPs identified in the SWPPP, as well as post-construction stormwater BMPs.
- Areas of stabilization. Identify locations where stabilization practices are expected to occur. Mark areas where final stabilization has been accomplished.
- Other areas and roads. Indicate locations of material, waste, borrow, or equipment storage.

You should complete your site maps after reviewing Chapters 4 and 5 and any applicable BMP design manual to select appropriate BMPs for your site.

## *Use Site Maps to Track Progress*

Develop and keep up-to-date site maps showing non-structural BMPs that change frequently in location as the work on a construction site progresses. Your permit requires that you keep your SWPPP up-to-date, so mark up the site map with the location of these BMPs. Indicate the current location of the following:

- Portable toilets
- Material storage areas
- Vehicle and equipment fueling and maintenance areas
- Concrete washouts
- Paint and stucco washouts
- Dumpsters or other trash and debris containers
- Spill kits
- Stockpiles
- Any other non-structural non-stormwater management BMPs
- Any temporarily removed structural BMPs
- Any changes to the structural BMPs

If a marked-up site map is too full to be easily read, you should date and fold it, put it in the SWPPP for documentation, and start a new one. That way, there is a good hard copy record of what has occurred on-site.

Construction sites are dynamic. As conditions change at the construction site, such as the locations of BMPs, your SWPPP must reflect those changes.

# Chapter 4: SWPPP Development—Selecting Erosion and Sediment Control BMPs

▶ This chapter presents a brief discussion of erosion and sediment control principles and a discussion of some commonly used BMPs.

This document is not intended as an engineering or design manual on BMPs. The engineer or other qualified person that develops the details of your sediment and erosion control plan should be using the appropriate state or local specifications. The descriptions below provide a kind of checklist of the things to look for and some helpful installation and maintenance hints.

Erosion and sediment controls are the structural and non-structural practices used during the construction process to keep sediment in place (erosion control) and to capture any sediment that is moved by stormwater before it leaves the site (sediment control). Erosion controls—keeping soil where it is—are the heart of any effective SWPPP. Your SWPPP should rely on erosion controls as the primary means of preventing stormwater pollution. Sediment controls provide a necessary second line of defense to properly designed and installed erosion controls.

The suite of BMPs that you include in your SWPPP should reflect the specific conditions at the site. The information that you collected in the previous steps should help you select the appropriate BMPs for your site. An effective SWPPP includes a combination or suite of BMPs that are designed to work together.

## Ten Keys to Effective Erosion and Sediment Control (ESC)

The ultimate goal of any SWPPP is to protect rivers, lakes, wetlands, and coastal waters that could be affected by your construction project. The following principles and tips should help you build an effective SWPPP. **Keep in mind that there are many BMP options available to you. We have selected a few common BMPs to help illustrate the principles discussed in this chapter.**

*Erosion Control (keeping the dirt in place) and Minimizing the Impact of Construction*

1. **Minimize disturbed area and protect natural features and soil**
2. **Phase construction activity**
3. **Control stormwater flowing onto and through the project**
4. **Stabilize soils promptly**
5. **Protect slopes**

*Sediment Controls (the second line of defense)*

6. **Protect storm drain inlets**
7. **Establish perimeter controls**
8. **Retain sediment on-site and control dewatering practices**
9. **Establish stabilized construction exits**
10. **Inspect and maintain controls**

## *Take a Closer Look...*

### BMPs in Combination

BMPs work much better when they are used in combination. For instance, a silt fence should not be used alone to address a bare slope. An erosion control BMP should be used to stabilize the slope, and the silt fence should serve as the backup BMP.

### *What does this mean to me?*

*Wherever possible, rely on erosion controls to keep sediment in place. Back up those erosion controls with sediment controls to ensure that sediment doesn't leave your site. Continually evaluate your BMPs. Are they performing well? Could the addition of a supplemental BMP improve performance? Should you replace a BMP with another one that might work better? Using BMPs in series also gives you some protection in case one BMP should fail.*

## Erosion Control and Minimizing the Impact of Construction

***ESC Principle 1: Minimize disturbed area and protect natural features and soil.*** As you put together your SWPPP, carefully consider the natural features of the site that you assessed in Chapter 3. By carefully delineating and controlling the area that will be disturbed by grading or construction activities, you can greatly reduce the potential for soil erosion and stormwater pollution problems. Limit disturbed areas to only those necessary for the construction of your project. Natural vegetation is your best and cheapest erosion control BMP.

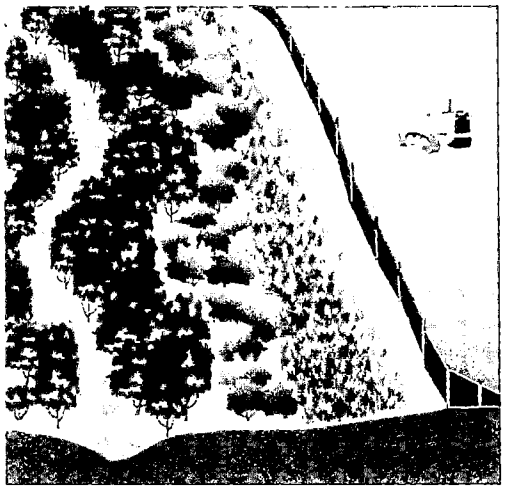


**Figure 7. Protect vegetated buffers by using silt fence or other sediment controls.**

Protecting and preserving topsoil is also a good BMP. Removing topsoil exposes underlying layers that are often more prone to erosion and have less infiltration capacity. Keeping topsoil in place preserves the natural structure of the soils and aids the infiltration of stormwater.

***ESC Principle 2: Phase construction activity.*** Another technique for minimizing the duration of exposed soil is phasing. By scheduling or sequencing your construction work and concentrating it in certain areas, you can minimize the amount of soil that is exposed to the elements at any given time. Limiting the area of disturbance to places where construction activities are underway and stabilizing them as quickly as possible can be one of your most effective BMPs.

***ESC Principle 3: Control stormwater flowing onto and through your project.*** Plan for any potential stormwater flows coming onto the project area from upstream locations, and divert (and slow) flows to prevent erosion. Likewise, the volume and velocity of on-site stormwater runoff should be controlled to minimize soil erosion.

*Example BMP: Diversion Ditches or Berms*

*Description:* Diversion ditches or berms direct runoff away from unprotected slopes and may also direct sediment-laden runoff to a sediment-trapping structure. A diversion ditch can be located at the upslope side of a construction site to prevent surface runoff from entering the disturbed area. Ditches or berms on slopes need to be designed for erosive velocities. Also, ensure that the diverted water is released through a stable outlet and does not cause downslope or downstream erosion or flooding.

*Installation Tips:*

- Divert run-on and runoff away from disturbed areas
- Ensure that the diversion is protected from erosion, using vegetation, geotextiles, or other appropriate BMPs
- Divert sediment-laden water to a sediment-trapping structure
- Use practices that encourage infiltration of stormwater runoff wherever possible

*Maintenance:*

- Inspect diversions and berms, including any outlets, regularly and after each rainfall
- Remove any accumulated sediment

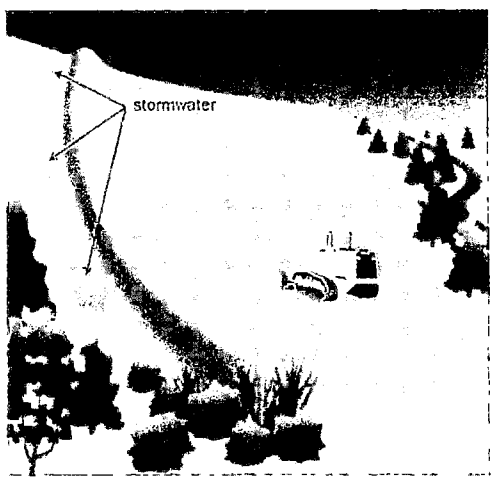



**Figure 8. Illustration of a construction berm to divert stormwater away from the disturbed construction area.**

***ESC Principle 4: Stabilize soils promptly.*** Where construction activities have temporarily or permanently ceased, you should stabilize exposed soils to minimize erosion. You should have stabilization measures in place after grading activities have ceased (many permits require stabilization within a specified time frame). You can provide either temporary or permanent cover to protect exposed soils. Temporary measures are necessary when an area of a site is disturbed but where activities in that area are not completed or until permanent BMPs are established. Topsoil stockpiles should also be protected to minimize any erosion from these areas. Temporary-cover BMPs include temporary seeding, mulches, matrices, blankets and mats, and the use of soil binders (there may be additional state and local requirements for the use of chemical-based soil binders). Permanent-cover BMPs include permanent seeding and planting, sodding, channel stabilization, and vegetative buffer strips. Silt fence and other sediment control measures are not stabilization measures.

**SWPPP Tip!**

### Final Stabilization

Once construction activity in an area is completed and the area is stabilized (typically by achieving 70 percent permanent vegetative cover), you can mark this area on your SWPPP and discontinue inspections in that area. By bringing areas of your site to final stabilization, you can reduce your workload associated with maintaining and inspecting BMPs. For more information on final stabilization, see Chapter 9.

*Example BMP: Temporary Seeding*

*Description:* Temporarily seeding an area to establish vegetative cover is one of the most effective, and least expensive, methods of reducing erosion. This approach, as a single BMP, might not be appropriate on steep slopes, when vegetation cannot be established quickly enough to control erosion during a storm event, or when additional activities might occur soon in the area.

*Installation Tips:*

- Seed and mulch area (the mulch provides temporary erosion protection by protecting the soil surface, moderating temperature, and retaining moisture while seeds germinate and grow)
- Water regularly, if needed, to ensure quick growth
- Maintain backup BMPs, such as silt fence or settling ponds

**SWPPP Tip!**

### Wind Control BMPs

In areas where dust control is an issue, your SWPPP should include BMPs for wind-erosion control. These consist of mulching, wet suppression (watering), and other practices.

***ESC Principle 5: Protect slopes.*** Protect all slopes with appropriate erosion controls. Steeper slopes, slopes with highly erodible soils, or long slopes require a more complex combination of controls. Erosion control blankets, bonded fiber matrices, or turf reinforcement mats are very effective options. Silt fence or fiber rolls may also be used to help control erosion on moderate slopes and should be installed on level contours spaced at 10- to 20-foot intervals. You can also use diversion channels and berms to keep stormwater off slopes.

*Example BMP: Rolled erosion control products*

*Description:* Erosion control products include mats, geotextiles, and erosion control blankets and products that provide temporary stabilization and help to establish vegetation on disturbed soils. Such products help control erosion and help establish vegetation and are often used on slopes, channels, or stream banks.

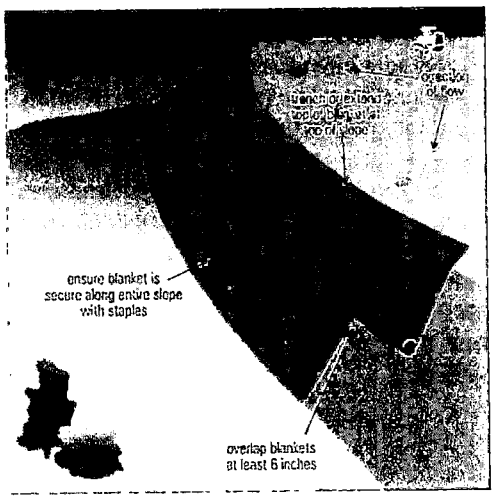



**Figure 9. Illustration of erosion control blankets installed on slope.**

*Installation Tips:*

- Use rolled erosion-control products on slopes steeper than 3 to 1 (horizontal to vertical) and in swales or long channels

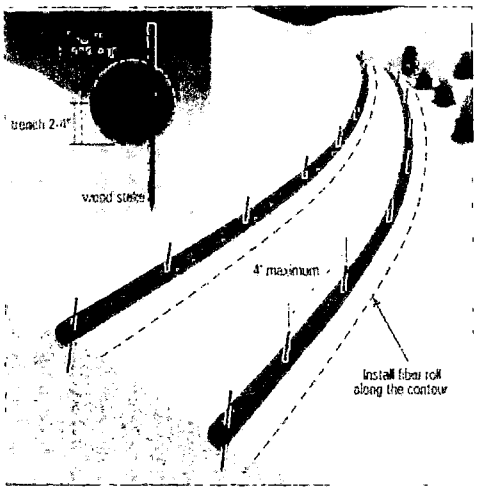



**Figure 10. Illustration of a fiber roll installation along a slope.**

- Trench the top of the blanket into the ground to prevent runoff from flowing under the blanket
- Overlap the lower end of the top mat over the top of the downslope mat to ensure that runoff stays on top of the blankets and mats
- Staple blankets and mats according to specifications

*Maintenance:*

- Periodically inspect for signs of erosion or failure
- Repair the blanket or mat if necessary
- Continue inspections until vegetation is established at the level required to qualify as final *stabilization*

***ESC Principle 6: Protect storm drain inlets.*** Protect all inlets that could receive stormwater from the project until final stabilization of the site has been achieved. Install inlet protection before soil-disturbing activities begin. Maintenance throughout the construction process is important. Upon completion of the project, storm drain inlet protection is one of the temporary BMPs that should be removed. Storm drain inlet protection should be used not only for storm drains within the active construction project, but also for storm drains outside the project area that might receive stormwater discharges from the project. If there are storm drains on private property that could receive stormwater runoff from your project, coordinate with the owners of that property to ensure proper inlet protection.

*Example BMP: Storm Drain Inlet Protection*

*Description:* Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. Several types of filters are commonly used for inlet protection: silt fence, rock-filled bags, or block and gravel. The type of filter used depends on the inlet type (for example, curb inlet, drop inlet), slope, and volume of flow. Many different commercial inlet filters are also available. Some commercial inlet filters are placed in front of or on top of an inlet, while others are placed inside the inlet under the grate.

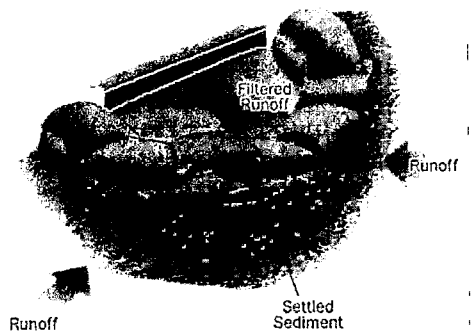



**Figure 11. Illustration of a storm drain inlet with rock-filled bags filtering stormwater.**

*Installation Tips:*

- Install inlet protection as soon as storm drain inlets are installed and before land-disturbance activities begin in areas with existing storm drain systems
- Protect all inlets that could receive stormwater from your construction project
- Use in conjunction with other erosion prevention and sediment control BMPs—remember, inlet protection is a secondary BMP!
- Design your inlet protection to handle the volume of water from the area being drained. Ensure that the design is sized appropriately.

*Maintenance:*

- Inspect inlets frequently and after each rainfall

- Remove accumulated sediment from around the device and check and remove any sediment that might have entered the inlet
- Replace or repair the inlet protection if it becomes damaged
- Sweep streets, sidewalks, and other paved areas regularly

**SWPPP Tip!**

Storm drain inlet protection should never be used as a primary BMP! Use erosion control techniques such as hydromulching or erosion-control blankets to prevent erosion. Use inlet protection and other sediment control BMPs as a *backup* or last line of defense.

***ESC Principle 7: Establish perimeter controls.*** Maintain natural areas and supplement them with silt fence and fiber rolls around the perimeter of your site to help prevent soil erosion and stop sediment from leaving the site. Install controls on the downslope perimeter of your project (it is often unnecessary to surround the entire site with silt fence). Sediment barriers can be used to protect stream buffers, riparian areas, wetlands, or other waterways. They are effective only in small areas and should not be used in areas of concentrated flow.

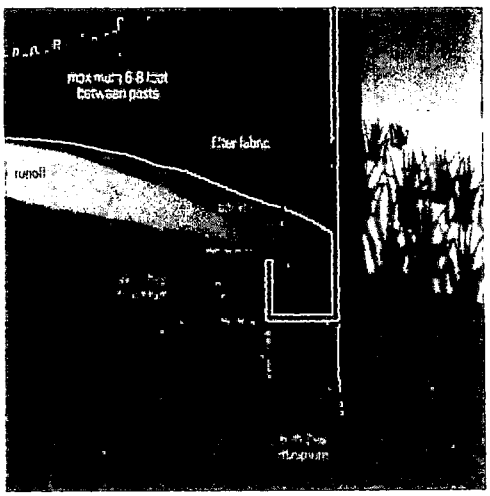



**Figure 12. Illustration of proper techniques to use in installing silt fence.**

*Example BMP: Silt Fence and Fiber Rolls*

*Description:* A silt fence is a temporary sediment barrier consisting of a geotextile attached to supporting posts and trenched into the ground. Silt fencing is intended to retain sediment that has been dislodged by stormwater. It is designed only for runoff from small areas and is not intended to handle flows from large slopes or in areas of concentrated flow. Fiber rolls serve the same purpose and consist of an open mesh tubular sleeve filled with a fibrous material which traps sediment. Fiber rolls are generally staked to the ground.

*Installation Tips:*

**DO:**

- Use silt fence or fiber rolls as perimeter controls, particularly at the lower or down slope edge of a disturbed area
- Leave space for maintenance between toe of slope and silt fence or roll
- Trench in the silt fence on the uphill side (6 inches deep by 6 inches wide)
- Install stakes on the downhill side of the fence or roll
- Curve the end of the silt fence or fiber roll up-gradient to help it contain runoff

**DON'T:**

- Install a silt fence or fiber rolls in ditches, channels, or areas of concentrated flow
- Install it running up and down a slope or hill
- Use silt fencing or fiber rolls alone in areas that drain more than a quarter-acre per 100 feet of fence

*Maintenance:*

- Remove sediment when it reaches one-third of the height of the fence or one-half the height of the fiber roll
- Replace the silt fence or roll where it is worn, torn, or otherwise damaged
- Retrench or replace any silt fence or roll that is not properly anchored to the ground

***ESC Principle 8: Retain sediment on-site and control dewatering practices.*** Sediment barriers described in ESC Principle 7 can trap sediment from small areas, but when sediment retention from a larger area is required, consider using a temporary sediment trap or sediment basin. These practices detain sediment-laden runoff for a period of time, allowing sediment to settle before the runoff is discharged. Proper design and maintenance are essential to ensure that these practices are effective.

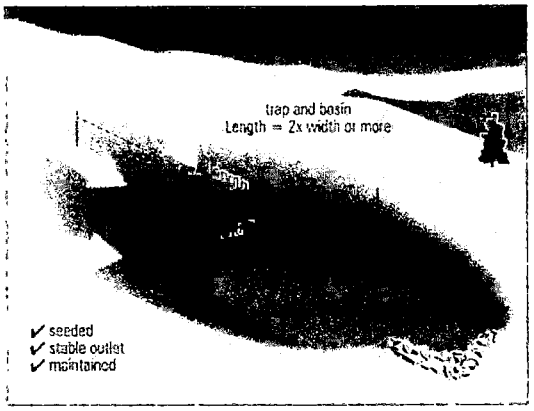


**Figure 13. Illustration of a sediment basin.**

You should use a sediment basin for common drainage locations that serve an area with 10 or more acres disturbed at any one time. The basin should be designed to provide storage for the volume of runoff from the drainage area for at least a 2-year, 24-hour storm (or 3,600 cubic feet of storage per acre drained, which is enough to contain 1 inch of runoff, if the 2-year, 24-hour calculation has not been performed). Check your permit for exact basin sizing requirements. Sediment basins should be located at low-lying areas of the site and on the down-gradient side of bare soil areas where flows converge. Do not put sediment traps or basins in or immediately adjacent to flowing streams or other waterways.

Where a large sediment basin is not practical, use smaller sediment basins or sediment traps (or both) where feasible. At a minimum, use silt fences, vegetative buffer strips, or equivalent sediment controls for all down-gradient boundaries (and for those side-slope boundaries deemed appropriate for individual site conditions).

Dewatering practices are used to remove ground water or accumulated rain water from excavated areas. Pump muddy water from these areas to a temporary or permanent sedimentation basin or to an area completely enclosed by silt fence in a flat vegetated area where discharges can infiltrate into the ground. Never discharge muddy water into storm drains, streams, lakes, or wetlands unless the sediment has been removed before discharge.

Keep in mind that some states and local jurisdictions require a separate permit for dewatering activities at a site.

***ESC Principle 9: Establish stabilized construction exits.*** Vehicles entering and leaving the site have the potential to track significant amounts of sediment onto streets. Identify and clearly mark one or two locations where vehicles will enter and exit the site and focus stabilizing measures at those locations. Construction entrances are commonly made from large crushed rock. They can be further stabilized using stone pads or concrete. Also, steel wash racks and a hose-down system will remove even more mud and debris from vehicle tires. Divert runoff from wash areas to a sediment trap or basin. No system is perfect, so sweeping the street regularly completes this BMP.

*Example BMP: Stabilized Construction Exit*

*Description:* A rock construction exit can reduce the amount of mud transported onto paved roads by vehicles. The construction exit does this by removing mud from vehicle tires before the vehicle enters a public road.

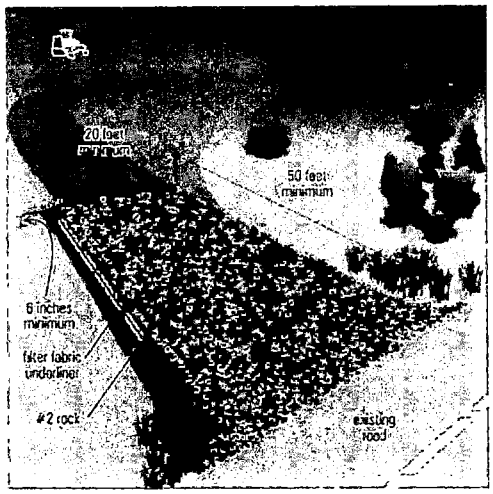


**Figure 14. Illustration of a stabilized construction exit.**

You might also want to install a wheel wash when mud is especially difficult to remove or space doesn't allow sufficient tire revolutions (four or five are needed) before exiting the site. Direct wash water to a suitable settling area—do not discharge wash water to a stream or storm drain!

*Installation tips:*

- Ensure that the exit is at least 50 feet long (generally, the length of two dump trucks) and graded so runoff does not enter the adjacent street
- Place a geotextile fabric under a layer of aggregate at least 6–12 inches thick. The stones or aggregate should be 3–6 inches in diameter
- Train employees and subcontractors to use the designated construction exits. Empower your employees to provide directions to subcontractors and others that are not on the site every day

*Maintenance:*

- Replenish or replace aggregate if it becomes clogged with sediment
- Sweep the street regularly

***ESC Principle 10: Inspect and maintain controls.*** Inspection and maintenance is just as important as proper planning, design, and installation of controls. Without adequate maintenance, erosion and sediment controls will quickly fail, sometimes after just one rainfall, and cause significant water quality problems and potential violations of the NPDES construction general permit. Your permit likely requires you to maintain your BMPs at all times. To do this effectively, you should establish an inspection and maintenance approach or strategy that includes both regular and spot inspections. Inspecting both prior to predicted storm events and after will help ensure that controls are working effectively. Perform maintenance or corrective action as soon as problems are noted. **Inspection and maintenance of BMPs are addressed in more detail in Chapter 6.**

## Other Sediment and Erosion Control Techniques

As mentioned at the beginning of this chapter, there are many other erosion and sediment control techniques that can be used effectively. The BMPs highlighted in this chapter are among those more commonly used and highlight many general erosion and sediment control principles for which other BMPs may be used effectively. Check to see if your state or local government has developed a BMP design manual for detailed information on any BMP you are considering. Appendix D lists several good BMP design manuals. You can also find out more about various BMPs by visiting EPA's Menu of BMPs at **www.epa.gov/npdes/menuofbmps**

The following BMPs are also commonly used at construction sites.

Erosion control measures:

- Surface roughening, trackwalking, scarifying, sheepsfoot rolling, imprinting
- Soil bioengineering techniques (e.g., live staking, fascines, brush wattles)
- Composting
- Sodding

Sediment control and runoff management measures:

- Gravel bag barrier
- Compost berm
- Rock or brush filters
- Baffles or skimmers in sediment basins to increase effectiveness
- Lowering soil levels near streets and sidewalks to prevent runoff
- Level spreaders
- Energy dissipaters
- Check dams

# Chapter 5: SWPPP Development—Selecting Good Housekeeping BMPs

▶ This chapter presents a brief discussion of good housekeeping principles to consider to ensure your construction site does not contaminate stormwater runoff.

As noted in Chapter 3, sediment is the principal pollutant of concern in stormwater discharges from construction sites. But, EPA's CGP and many state construction general permits require that the SWPPP describe good housekeeping measures for other pollutants that might be found on construction sites. This chapter discusses these measures.

## Six Key Pollution Prevention Principles for Good Housekeeping

Construction projects generate large amounts of building-related waste, which can end up polluting stormwater runoff if not properly managed. The suite of BMPs that are described in your SWPPP must include pollution prevention (P2) or good housekeeping practices that are designed to prevent contamination of stormwater from a wide range of materials and wastes at your site. The six principles described below are designed to help you identify the pollution prevention practices that should be described in your SWPPP and implemented at your site.

1. Provide for waste management
2. Establish proper building material staging areas
3. Designate paint and concrete washout areas
4. Establish proper equipment/vehicle fueling and maintenance practices
5. Control equipment/vehicle washing and allowable non-stormwater discharges
6. Develop a spill prevention and response plan

*P2 Principle 1: Provide for waste management.* Design proper management procedures and practices to prevent or reduce the discharge of pollutants to stormwater from solid or liquid wastes that will be generated at your site. Practices such as trash disposal, recycling, proper material handling, and cleanup measures can reduce the potential for stormwater runoff to pick up construction site wastes and discharge them to surface waters.

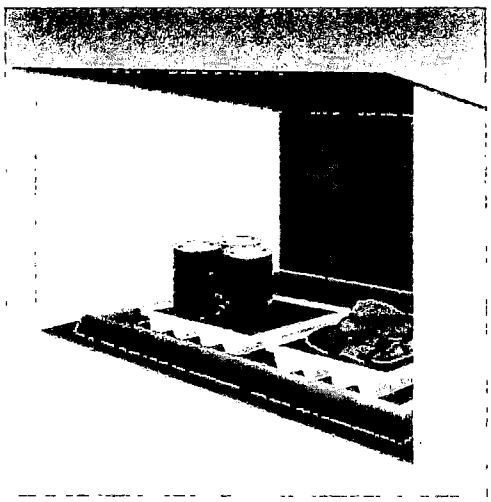


**Figure 15. Illustration showing construction materials with secondary containment and overhead cover to prevent stormwater contamination.**

Provide convenient, well-maintained, and properly located toilet facilities. Provide for regular inspections, service, and disposal. Locate toilet facilities away from storm drain inlets and waterways to prevent accidental spills and contamination of stormwater. Treat or dispose of sanitary and septic waste in accordance with state or local regulations.

Proper material use, storage, waste disposal, and training of employees and subcontractors can prevent or reduce the discharge of hazardous and toxic wastes to stormwater. Implement a comprehensive set of waste-management practices for hazardous or toxic materials, such as paints, solvents, petroleum products, pesticides, wood preservatives, acids, roofing tar, and other materials. Practices should include storage, handling, inventory, and cleanup procedures, in case of spills (see the following P2 principles).

## Waste Management Checklist

### Solid or Construction Waste

- ✓ Designate trash and bulk waste-collection areas on-site
- ✓ Recycle materials whenever possible (e.g., paper, wood, concrete, oil)
- ✓ Segregate and provide proper disposal options for hazardous material wastes
- ✓ Clean up litter and debris from the construction site daily
- ✓ Locate waste-collection areas away from streets, gutters, watercourses, and storm drains. Waste-collection areas (dumpsters, and such) are often best located near construction site entrances to minimize traffic on disturbed soils. Consider secondary containment around waste collection areas to further minimize the likelihood of contaminated discharges.

### Sanitary and Septic Waste

- ✓ Provide restroom facilities on-site
- ✓ Maintain clean restroom facilities and empty porta-johns regularly
- ✓ Provide secondary containment pans under porta-johns, where possible
- ✓ Provide tie-downs or stake downs for porta-johns in areas of high winds
- ✓ Educate employees, subcontractors, and suppliers on locations of facilities
- ✓ Do not discharge or bury wastewater at the construction site
- ✓ Inspect facilities for leaks, repair or replace immediately

### Hazardous Materials and Wastes

- ✓ Develop and implement employee and subcontractor education, as needed, on hazardous and toxic waste handling, storage, disposal, and cleanup
- ✓ Designate hazardous waste-collection areas on-site
- ✓ Place all hazardous and toxic material wastes in secondary containment
- ✓ Hazardous waste containers should be inspected to ensure that all containers are labeled properly and that no leaks are present

***P2 Principle 2: Establish proper building material handling and staging areas.*** Your SWPPP should include comprehensive handling and management procedures for building materials, especially those that are hazardous or toxic. Paints, solvents, pesticides, fuels and oils, other hazardous materials or any building materials that have the potential to contaminate stormwater should be stored indoors or under cover whenever possible or in areas with secondary containment. Secondary containment prevents a spill from spreading across the site and include dikes, berms, curbing, or other containment methods. Secondary containment techniques should also ensure the protection of ground water. Designate staging areas for activities such as fueling vehicles, mixing paints, plaster, mortar, and so on. Designated staging areas will help you to monitor the use of materials and to clean up any spills. Training employees and subcontractors is essential to the success of this pollution prevention principle.

**SWPPP Tip!**

### *Material Staging Area Measures*

Your SWPPP should include procedures for storing materials that can contribute pollutants to stormwater. Consider the following:

- Train employees and subcontractors in proper handling and storage practices
- Designate site areas for storage. Provide storage in accordance with secondary containment regulations and provide cover for hazardous materials when necessary. Ensure that storage containers are regularly inspected for leaks, corrosion, support or foundation failure, or any other signs of deterioration and tested for soundness
- Reuse and recycle construction materials when possible

***P2 Principle 3: Designate washout areas.*** Concrete contractors should be encouraged, where possible, to use the washout facilities at their own plants or dispatch facilities. If it is necessary to provide for concrete washout areas on-site, designate specific washout areas and design facilities to handle anticipated washout water. Washout areas should also be provided for paint and stucco operations. Because washout areas can be a source of pollutants from leaks or spills,

EPA recommends that you locate them at least 50 yards away from storm drains and watercourses whenever possible.

Several companies rent or sell prefabricated washout containers, and some provide disposal of waste solids and liquids along with the containers. These prefabricated containers are sturdy and provide a more reliable option for preventing leaks and spills of wash water than self-constructed washouts. Alternatively, you can construct your own washout area, either by digging a pit and lining it with 10 mil plastic sheeting or creating an aboveground structure from straw bales or sandbags with a plastic liner. If you create your own structure, you should inspect it daily for leaks or tears in the plastic because these structures are prone to failure.

Regular inspection and maintenance are important for the success of this BMP. Both self-constructed and prefabricated washout containers can fill up quickly when concrete, paint, and stucco work are occurring on large portions of the site. You should also inspect for evidence that contractors are using the washout areas and not dumping materials onto the ground or into drainage facilities. If the washout areas are not being used regularly, consider posting additional signage, relocating the facilities to more convenient locations, or providing training to workers and contractors.

**SWPPP Tip!**

### *Washout Area Measures*

When concrete, paint, or stucco is part of the construction process, consider these practices which will help prevent contamination of stormwater. Include the locations of these areas and your maintenance and inspection procedures in your SWPPP.

- Do not washout concrete trucks or equipment into storm drains, streets, gutters, uncontained areas, or streams
- Establish washout areas and advertise their locations with signs
- Provide adequate containment for the amount of wash water that will be used
- Inspect washout structures daily to detect leaks or tears and to identify when materials need to be removed
- Dispose of materials properly. The preferred method is to allow the water to evaporate and to recycle the hardened concrete. Full service companies may provide dewatering services and should dispose of wastewater properly. Concrete wash water can be highly polluted. It should not be discharged to any surface water, storm sewer system, or allowed to infiltrate into the ground. It should not be discharged to a sanitary sewer system without first receiving written permission from the system operator

***P2 Principle 4: Establish proper equipment/vehicle fueling and maintenance practices.*** Performing equipment/vehicle fueling and maintenance at an off-site facility is preferred over performing these activities on the site, particularly for road vehicles (e.g., trucks, vans). For grading and excavating equipment, this is usually not possible or desirable. Create an on-site fueling and maintenance area that is clean and dry. The on-site fueling area should have a spill kit, and staff should know how to use it. If possible, conduct vehicle fueling and maintenance activities in a covered area; outdoor vehicle fueling and maintenance is a potentially significant source of stormwater pollution. Significant maintenance on vehicles and equipment should be conducted off-site.

**SWPPP Tip!**

### *Equipment/Vehicle Fueling and Maintenance Measures*

Consider the following practices to help prevent the discharge of pollutants to stormwater from equipment/vehicle fueling and maintenance. Include the locations of these areas and your inspection and maintenance procedures in your SWPPP.

- Train employees and subcontractors in proper fueling procedures (stay with vehicles during fueling, proper use of pumps, emergency shut-off valves, and such)
- Inspect on-site vehicles and equipment daily for leaks, equipment damage, and other service problems
- Clearly designate vehicle/equipment service areas away from drainage facilities and water-courses to prevent stormwater run-on and runoff
- Use drip pans, drip cloths, or absorbent pads when replacing spent fluids
- Collect all spent fluids, store in appropriate labeled containers in the proper storage areas, and recycle fluids whenever possible

***P2 Principle 5: Control equipment/vehicle washing and allowable non-stormwater discharges.*** Environmentally friendly washing practices can be practiced at every construction site to prevent contamination of surface and ground water from wash water. Procedures and practices include using off-site facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water or routing to the sanitary sewer; and training employees and subcontractors in proper cleaning procedures.

## Take a Closer Look...

**Non-Stormwater Runoff**

A construction site might have sources of runoff that are not generated by stormwater. These non-stormwater discharges include fire hydrant flushing, vehicle or equipment wash water (no detergents!), water used to control dust, and landscape irrigation.

### What does this mean to me?

*Take steps to infiltrate these sources of uncontaminated water into the ground. You can also route these sources of water to sediment ponds or detention basins or otherwise treat them with appropriate BMPs.*

## SWPPP Tip!

### Equipment/Vehicle Washing Measures

The following equipment/vehicle washing measures will help prevent stormwater pollution. Include the location of your washing facilities and your inspection and maintenance procedures in your SWPPP.

- Educate employees and subcontractors on proper washing procedures
- Clearly mark the washing areas and inform workers that all washing must occur in this area
- Contain wash water and treat and infiltrate it whenever possible
- Use high-pressure water spray at vehicle washing facilities without any detergents because water can remove most dirt adequately
- Do not conduct any other activities, such as vehicle repairs, in the wash area

***P2 Principle 6: Develop a spill prevention and response plan.*** Most state and EPA construction general permits require the preparation of spill prevention and response plans. Generally, these plans can be included or incorporated into your SWPPP. The plan should clearly identify ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and response. The plan should also specify material handling procedures and storage requirements and ensure that clear and concise spill cleanup procedures are provided and posted for areas in which spills may potentially occur. When developing a spill prevention plan, include, at a minimum, the following:

- Note the locations of chemical storage areas, storm drains, tributary drainage areas, surface waterbodies on or near the site, and measures to stop spills from leaving the site
- Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities to request assistance
- Describe the procedures for immediate cleanup of spills and proper disposal
- Identify personnel responsible for implementing the plan in the event of a spill

## SWPPP Tip!

### Spill Prevention Measures

Additional spill prevention measures that will help prevent spills and leaks include the following:

- Describe and list all types of equipment to be used to adequately clean up the spill
- Provide proper handling and safety procedures for each type of waste
- Establish an education program for employees and subcontractors on the potential hazards to humans and the environment from spills and leaks
- Update the spill prevention plan and clean up materials as changes occur to the types of chemicals stored and used at the facility

## Take a Closer Look...

**Spill Prevention, Control and Countermeasure (SPCC) Plan**

Construction sites may be subject to 40 CFR Part 112 regulations that require the preparation and implementation of a SPCC Plan to prevent oil spills from aboveground and underground storage tanks. Your facility is subject to this rule if you are a nontransportation-related facility that:

- Has a total storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons and
- Could reasonably be expected to discharge oil in quantities that may be harmful to navigable waters of the United States and adjoining shorelines

Furthermore, if your facility is subject to 40 CFR Part 112, your SWPPP should reference the SPCC Plan. To find out more about SPCC Plans, see EPA's website on SPPC at **www.epa.gov/oilspill/spcc.htm**

### What does this mean to me?

**Reporting Oil Spills**

*In the event of an oil spill, you should contact the National Response Center toll free at 1-800-424-8802 for assistance, or for more details, visit their website:* ***www.nrc.uscg.mil/nrchp.html***

# Chapter 6: SWPPP Development—Inspections, Maintenance, and Recordkeeping

▶ **This chapter describes the inspection and maintenance procedures your SWPPP should include, as well as recordkeeping requirements.**

## A. Describe Your Plans and Procedures for Inspecting BMPs

Earlier discussions in this manual pointed out that the effectiveness of erosion and sediment control BMPs and good housekeeping and pollution prevention measures depend on consistent and continual inspection and maintenance. This step focuses on developing a plan for BMP inspection and maintenance to ensure that a schedule and procedures are in place.

### *Inspections*

Your responsibility does not stop after BMPs are installed. Your BMPs must be maintained in good working order at all times. Further, your permit requires that you conduct regular inspections and document the findings of those inspections in your SWPPP.

Your construction general permit describes the ***minimum*** frequency of inspections, which is typically weekly or bi-weekly and after each rainfall event exceeding one-half inch. To meet the requirement to maintain all BMPs in good working order, EPA recommends that you develop an inspection schedule that goes beyond these minimums and is customized for your site and the conditions affecting it.

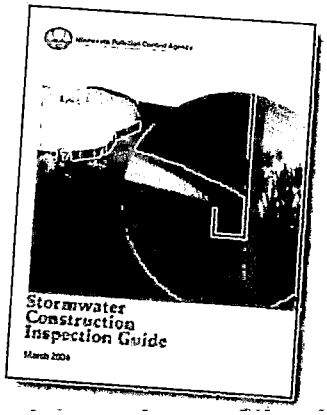
In developing your inspection schedule consider the following:

- Consider using *spot* inspections. You may want to inspect certain parts of your site more frequently or even daily. Target places that need extra attention, such as areas around construction site entrances, check nearby streets for dirt, check inlet protection, and so on.
- Consider using informal inspections. Your permit outlines the minimum requirements for formal inspections that must be documented and included in your SWPPP. You can also add informal inspections that wouldn't require documentation, unless of course, a problem is identified. Always document any problems you find and those that are identified by staff.
- Consider adding inspections *before or even during* rain events. Many permits require inspections of BMPs after rain events. You should consider adding inspections ***before or during*** predicted rain events. Consult a local weather source and initiate inspections before predicted storm events as a way to ensure that controls are operational.
- Train staff and subcontractors. Use your staff and subcontractors to help identify any potential problems with your BMPs. Again, document any issues that are confirmed problems.

**SWPPP Tip!**

*Inspection Guide*

The State of Minnesota has developed a *Stormwater Construction Inspection Guide* to assist municipal site inspectors in procedures for conducting a compliance inspection at construction sites. This guide can also be useful for construction operators conducting self-inspections. Available at www.pca.state.mn.us/water/stormwater/stormwatr-c.html




EPA recommends that you develop an inspection schedule that meets the needs of your site. You'll probably also want to update and refine this schedule based on your experiences, the findings of your inspections, and the changing conditions at your site.

**SWPPP Tip!**

### *Selecting BMP Inspectors*

A BMP inspection is only as good as the inspector. Therefore, it is important to select qualified personnel to conduct BMP inspections. The SWPPP should identify who has the responsibility for conducting inspections. Personnel selected to conduct inspections should be knowledgeable in the principles and practices of erosion and sediment controls, possess the technical skills to assess conditions at the construction site that could impact stormwater quality, and assess the effectiveness of any sediment and erosion control measures selected.

Several states and other organizations offer training that will help prepare inspectors to accurately evaluate BMPs, decide when maintenance is appropriate, or when a different BMP should be substituted. (Several states require that sites be inspected by someone that the state certifies as a qualified inspector.) One national organization offers two certification programs that would be useful for personnel who are developing and implementing SWPPPs and conducting inspections. These certification programs are called: *"Certified Professional in Erosion and Sediment Control (CPESC)"* and *"Certified Professional in Stormwater Quality (CPSWQ)."* You can find more information on these programs at **www.cpesc.org**

## *Inspection Reports*

Complete an inspection report after each inspection. You should retain copies of all inspection reports and keep them with or in your SWPPP. Generally, the following information is required to be included in your inspection report:

- Inspection date
- Inspector information, including the names, titles, and qualifications of personnel conducting the inspection
- Weather information for the period since the last inspection (or for the first inspection since commencement of construction activity) including a best estimate of the beginning of each storm, its duration, approximate amount of rainfall for each storm (in inches), and whether any discharges occurred. You may create a log to record the basic weather information or you may keep copies of weather information from a reliable local source, such as the internet sites of local newspapers, TV stations, local universities, etc.
- Current weather information and a description of any discharges occurring at the time of the inspection
- Descriptions of evidence of previous or ongoing discharges of sediment or other pollutants from the site
- Location(s) of BMPs that need to be maintained
- Location(s) of BMPs that failed to operate as designed or proved inadequate for a location
- Location(s) where additional BMPs are needed but did not exist at the time of inspection
- Corrective action required, including any necessary changes to the SWPPP and implementation dates
- Reference to past corrective actions documenting follow-up actions taken

Consider taking digital photographs during inspections to document BMPs, problems identified, and progress in implementing the SWPPP.

**Appendix B includes an example stormwater inspection report.** You should use this report, or a similar report, to document your stormwater construction site inspections. Check to see if your state or local authority has developed an inspection checklist for your use. The inspection report is broken up into two main sections—site-specific BMPs and overall site issues. For the site-specific BMPs, you should number the structural and non-structural BMPs in your SWPPP on a copy of your site map (preferably in the order in which you would inspect them on the site). Then as you conduct your inspections, you can verify whether each BMP has been installed and maintained. If a BMP has not been installed or needs maintenance, describe this in the corrective action section and list a date for when the corrective action will be completed and who will be responsible for completing the action. The overall site issues section describes 11 common issues at construction sites you should inspect for. You can customize this form to meet the needs of your particular situation.

Make sure each inspection report is signed and certified consistent with your permit's requirements.

**Chapter 8, Section D contains more information on implementing an inspection program. Also, see the suggested inspection report form in Appendix B.**

**SWPPP Tip!**

*Consider More Effective BMPs*

During inspections, consider whether the installed BMPs are working effectively. If you find a BMP that is failing or overwhelmed by sediment, you should consider whether it needs to be replaced with a more effective BMP or enhanced by the addition of another, complimentary BMP. Ensure that you record such changes in your SWPPP and on your site map.

## B. BMP Maintenance

Implementing a good BMP maintenance program is essential to the success of your SWPPP and to your efforts to protect nearby waterways. You should conduct maintenance of BMPs regularly and whenever an inspection (formal or informal) identifies a problem or potential issue. For instance, trash and debris should be cleaned up, dumpsters should be checked and covered, nearby streets and sidewalks should be swept daily, and so on. Maintenance on erosion and sediment controls should be performed as soon as site conditions allow. Consider the following points when conducting maintenance:

- Follow the designers or manufacturer's recommended maintenance procedures for all BMPs
- Maintenance of BMPs will vary according to the specific area and site conditions
- Remove sediment from BMPs as appropriate and properly dispose of sediment into controlled areas to prevent soil from returning to the BMP during subsequent rain events
- Remove sediment from paved roadways and from around BMPs protecting storm drain inlets
- Ensure that construction support activities, including borrow areas, waste areas, contractor work areas, and material storage areas and dedicated concrete and asphalt batch plants are cleaned and maintained
- Replace damaged BMPs, such as silt fences, that no longer operate effectively

You should keep a record of all maintenance activities, including the date, BMP, location, and maintenance performed in your SWPPP.

## C. Recordkeeping

You must keep copies of the SWPPP, inspection records, copies of all reports required by the permit, and records of all data used to complete the NOI to be covered by the permit for a period of at least 3 years from the date that permit coverage expires or is terminated.

Records should include:

- A copy of the SWPPP, with any modifications
- A copy of the NOI and Notice of Termination (NOT) and any stormwater-related correspondence with federal, state, and local regulatory authorities
- Inspection forms, including the date, place, and time of BMP inspections
- Names of inspector(s)
- The date, time, exact location, and a characterization of significant observations, including spills and leaks
- Records of any non-stormwater discharges
- BMP maintenance and corrective actions taken at the site (Corrective Action Log)
- Any documentation and correspondence related to endangered species and historic preservation requirements
- Weather conditions (e.g., temperature, precipitation)
- Date(s) when major land disturbing (e.g. clearing, grading, and excavating) activities occur in an area
- Date(s) when construction activities are either temporarily or permanently ceased in an area
- Date(s) when an area is either temporarily or permanently stabilized

# Chapter 7: **Certification and Notification**

▶ **This chapter describes how, after developing your SWPPP, you can obtain permit coverage for your stormwater discharges.**

## A. Certification

### *Signature and Certification*

The construction site operator must sign the permit application form, which is often called a *Notice of Intent* or *NOI*. (In some instances, the construction general permit may not require the submission of an NOI or application. Construction activities may be covered automatically.)

All reports, including SWPPPs and inspection reports, generally must be signed by the construction site operator or a duly authorized representative of that person. The authorized representative is typically someone who has direct responsibility for implementing the SWPPP. If the operator chooses to designate an authorized representative, a signed letter or statement to that effect must be included in the SWPPP. Check your permit for exact requirements.

Your SWPPP must include the signature of the construction site operator or authorized representative and the certification statement provided in the general permit. An example of the certification language from EPA's Construction General Permit follows:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

This ensures that the SWPPP was developed and reviewed by a responsible party with the ability to implement the BMPs and other commitments described in the SWPPP.

### *Copy of Permit Requirements*

Most general permits require you to keep a copy of the permit and your NOI with your SWPPP. This allows you to quickly check the permit if a question arises about a permit requirement.

**SWPPP Tip!**

***Posting a sign at the construction entrance***

EPA and many state general permits require that you post a sign or other notice conspicuously near the main entrance of the construction site. EPA's permit requires that the sign contain a copy of the NOI, the location of the SWPPP, and a contact person for viewing the SWPPP.

### *Other State, Tribal, and Local Programs*

Include in your SWPPP a description of any other federal, state, tribal, or local requirements for erosion and sediment control and stormwater management that apply to your site. Many local governments also impose erosion and sediment control requirements; your SWPPP should comply with both the general permit and any applicable local requirements.

**SWPPP Tip!**

*Making your SWPPP available*

While EPA and most states do not require you to submit a copy of your SWPPP for review, your SWPPP must be available to these and other government agencies for inspection. Your permit may also require you to make your SWPPP available to the public, if requested. If you have the ability, you should consider posting your SWPPP on the Internet and publicizing the URL. Check your permit for exact requirements.

## B. Notification

Now that you have developed your SWPPP and before you begin construction, you must begin the process of obtaining permit coverage from your authorized state or EPA. Authorized states and EPA use *general* permits to cover all construction sites. These broadly written general or *umbrella* permits apply to all construction activities in a given state.

### *Obtaining Coverage Under a General Permit*

**Important! Before obtaining permit coverage, you should read a copy of the appropriate construction general permit *and* develop your SWPPP.**

To obtain coverage under a state or EPA construction general permit, you will typically need to fill out and submit an application form, often called a Notice of Intent or NOI. Submitting this form to the permitting authority indicates your *intent* to be authorized to discharge stormwater under the appropriate general permit for construction activities. Depending on the permit, you may be authorized to discharge immediately or at some later time. In some cases, you are not authorized to discharge until the state has notified you accordingly. EPA's Construction General Permit requires a 7-day waiting period after a complete NOI is received and posted on EPA's website (**www.epa.gov/npdes/noisearch**). The waiting period expires when the permit's status changes from *waiting* to *active*.

### *Take a Closer Look...*

**Information on the Application or Notice of Intent (NOI)**

The NOI provides the permitting authority with pertinent information about your construction site, such as owner/operator information, site location, estimated project start and completion dates, approximate area to be disturbed, information about your SWPPP, receiving waters, and endangered species review certification. An appropriate person who is authorized to represent your organization must sign and verify that the facts contained in the NOI are true and accurate. For businesses, a certifying official is typically a corporate officer, such as a president, vice president, or manager of operations. For municipalities, it's typically a principal executive officer or ranking elected official. Check your permit for exact signature requirements.

In general, the only information you need to submit to the permitting authority is the NOI. EPA and most authorized state agencies do not require you to submit your SWPPP for approval. However, many local governments review and approve at least the erosion and sediment control component of your SWPPP.

*What does this mean to me?*

*There are significant penalties for failing to obtain authorization to discharge or for submitting inaccurate information. If you are the certifying official, make sure you are authorized to discharge before construction activities begin.*

**SWPPP Tip!**

*Deadline for submitting NOIs under EPA's Construction General Permit*

For EPA's construction general permit, the fastest and easiest way to obtain permit coverage is to use EPA's electronic permit application system, called "eNOI" at **www.epa.gov/npdes/stormwater/enoi**. Using this approach, you may be authorized to discharge in as little as 7 days after submission of your electronic NOI. If you choose to submit your NOI by mail, EPA recommends that you send it at least one month before you need permit coverage.

# Chapter 8: **SWPPP Implementation**

▶ **Your SWPPP is your guide to preventing stormwater pollution. However, it is just a plan. Implementing your SWPPP, maintaining your BMPs, and then constantly reevaluating and revising your BMPs and your SWPPP are the keys to protecting your local waterways.**

## A. Train Your Staff and Subcontractors

Your site's construction workers and subcontractors might not be familiar with stormwater BMPs, and they might not understand their role in protecting local rivers, lakes and coastal waters. Training your staff and subcontractors in the basics of erosion control, good housekeeping, and pollution prevention is one of the most effective BMPs you can institute at your site.

Basic training should include

- Spill prevention and cleanup measures, including the prohibition of dumping any material into storm drains or waterways
- An understanding of the basic purpose of stormwater BMPs, including what common BMPs are on-site, what they should look like, and how to avoid damaging them
- Potential penalties associated with stormwater noncompliance

Staff directly responsible for implementing the SWPPP should receive comprehensive stormwater training, including

- The location and type of BMPs being implemented
- The installation requirements and water quality purpose for each BMP
- Maintenance procedures for each of the BMPs being implemented
- Spill prevention and cleanup measures
- Inspection and maintenance recordkeeping requirements

You can train staff and subcontractors in several ways: short training sessions (food and refreshments will help increase attendance), posters and displays explaining your site's various BMPs, written agreements with subcontractors to educate their staff members, signs pointing out BMPs and reminders to keep clear of them. Every construction site operator should try to train staff and subcontractors to avoid damaging BMPs. By doing so, operators can avoid the added expense of repairs.

**SWPPP Tip!**

***Train your staff and subcontractors!***

Here are a few key things you will want to cover with each person working on your site:

- Use only designated construction site entrances
- Keep equipment away from silt fences, fiber rolls, and other sediment barriers
- Know the locations of disposal areas, and know the proper practices for trash, concrete and paint washout, hazardous chemicals, and so on
- Keep soil, materials, and liquids away from paved areas and storm drain inlets. Never sweep or wash anything into a storm drain
- Know the location and understand the proper use of spill kits
- Know the locations of your site's designated protection areas. Keep equipment away from stream banks, valuable trees and shrubs, and steep slopes. Clearly mark these areas with signs
- Keep equipment off mulched, seeded, or stabilized areas. Post signs on these areas, too
- Know who to contact when problems are identified!

## B. Ensure Responsibility—Subcontractor Agreements

At any given site, there might be multiple parties (developer, general contractor, builders, subcontractors) that have roles and responsibilities for carrying out or maintaining stormwater BMPs at a given site. These roles and responsibilities should be documented clearly in the SWPPP (see Chapter 2, Section D). In some cases (state requirements vary), there may be one entity that has developed the SWPPP and filed for permit coverage and, therefore, is designated as the *operator.* When other parties at a site are not officially designated as operators, many operators are incorporating the roles and responsibilities of these *non-operators* in the agreements and contracts they have with these companies and individuals. This contract language should spell out responsibilities implementing and maintaining stormwater BMPs, for training staff, and for correcting damage to stormwater BMPs on the site. Several states have stormwater regulations that hold other parties liable even if they are not identified as the *operator.*

## C. Implement Your SWPPP Before Construction Starts

Once you have obtained permit coverage and you are ready to begin construction, it is time to implement your SWPPP. You must implement appropriate parts of your SWPPP before construction activity begins. This generally involves installing storm drain inlet protection, construction entrances, sediment basins, and perimeter silt fences before clearing, grading, and excavating activities begin.

After construction activities begin, your SWPPP should describe when additional erosion and sediment controls will be installed (generally after initial clearing and grading activities are complete). You should also begin BMP inspections once clearing and grading activities begin.

**SWPPP Tip!**

*Take Photographs During Inspections*

Taking photographs can help you document areas that need maintenance and can help identify areas where subcontractors might need to conduct maintenance. Photographs can also help provide documentation to EPA or state inspectors that maintenance is being performed.

**SWPPP Tip!**

*Prepare for the rain and snowmelt!*

In some areas of the country, construction site operators are required to develop *weather triggered* action plans that describe additional activities the operator will conduct 48 hours before a predicted storm (at least a 50 percent forecasted chance of rain). It is also a good idea to stockpile additional erosion and sediment control BMPs (such as silt fencing, and fiber rolls) at the site for use when necessary.

## D. Conduct Inspections and Maintain BMPs

As mentioned earlier (Chapter 6), EPA recommends that you develop an inspection schedule for your site that considers the size, complexity, and other conditions at your site. This should include regularly scheduled inspections and less formal inspections. EPA recommends that you develop a plan that includes inspections before and after anticipated rain events. You might also want to inspect some BMPs during rain events to see if they are actually keeping sediment on site! Conducting inspections during rain events also allows a construction site operator to address minor problems before they turn into major problems.

### *Temporarily Removed BMPs*

BMPs sometimes need to be temporarily removed to conduct work in an area of the site. These temporarily removed BMPs should be noted on the site plan and replaced as soon as possible after the completion of the activity requiring their removal. If a rain is forecast, the BMPs should be replaced as soon as possible before the rain event.

## Recommended Inspection Sequence

You should conduct thorough inspections of your site, making sure to inspect all areas and BMPs. The seven activities listed below are a recommended inspection sequence that will help you conduct a thorough inspection (adapted from MPCA 2004).

*1. Plan your inspection*

- ☑ Create a checklist to use during the inspection (see Appendix B)
- ☑ Obtain a copy of the site map with BMP locations marked
- ☑ Plan to walk the entire site, including discharge points from the site and any off-site support activities such as concrete batch plants should also be inspected
- ☑ Follow a consistent pattern each time to ensure you inspect all areas (for example, starting at the lowest point and working uphill)

*2. Inspect discharge points and downstream, off-site areas*

- ☑ Inspect discharge locations to determine whether erosion and sediment control measures are effective
- ☑ Inspect nearby downstream locations, if feasible
- ☑ Walk *down the street* to inspect off-site areas for signs of discharge. This is important in areas with existing curbs and gutters
- ☑ Inspect downslope municipal catch basin inlets to ensure that they are adequately protected

*3. Inspect perimeter controls and slopes*

- ☑ Inspect perimeter controls such as silt fences to determine if sediment should be removed
- ☑ Check the structural integrity of the BMP to determine if portions of the BMP need to be replaced
- ☑ Inspect slopes and temporary stockpiles to determine if erosion controls are effective

*4. Compare BMPs in the site plan with the construction site conditions*

- ☑ Determine whether BMPs are in place as required by the site plan
- ☑ Evaluate whether BMPs have been adequately installed and maintained
- ☑ Look for areas where BMPs are needed but are missing and are not in the SWPPP

*5. Inspect construction site entrances*

- ☑ Inspect the construction exits to determine if there is tracking of sediment from the site onto the street
- ☑ Refresh or replace the rock in designated entrances
- ☑ Look for evidence of additional construction exits being used that are not in the SWPPP or are not stabilized
- ☑ Sweep the street if there is evidence of sediment accumulation

*6. Inspect sediment controls*

- ☑ Inspect any sediment basins for sediment accumulation
- ☑ Remove sediment when it reduces the capacity of the basin by the specified amount (many permits have specific requirements for sediment basin maintenance. Check the appropriate permit for requirements and include those in your SWPPP)

*7. Inspect pollution prevention and good housekeeping practices*

- ☑ Inspect trash areas to ensure that waste is properly contained
- ☑ Inspect material storage and staging areas to verify that potential pollutant sources are not exposed to stormwater runoff
- ☑ Verify that concrete, paint, and stucco washouts are being used properly and are correctly sized for the volume of wash water
- ☑ Inspect vehicle/equipment fueling and maintenance areas for signs of stormwater pollutant exposure

### *Common Compliance Problems During Inspections*

The following are problems commonly found at construction sites. As you conduct your inspections, look for these problems on your site (adapted from MPCA 2004).

**Problem #1—Not using phased grading or providing temporary or permanent cover (i.e., soil stabilization)**
In general, construction sites should phase their grading activities so that only a portion of the site is exposed at any one time. Also, disturbed areas that are not being actively worked should have temporary cover. Areas that are at final grade should receive permanent cover as soon as possible.

**Problem #2—No sediment controls on-site**
Sediment controls such as silt fences, sediment barriers, sediment traps and basins must be in place before soil-disturbance activities begin. Don't proceed with grading work out-of-phase.

**Problem #3—No sediment control for temporary stockpiles**
Temporary stockpiles must be seeded, covered, or surrounded by properly installed silt fence. Stockpiles should never be placed on paved surfaces.

**Problem #4—No inlet protection**
All storm drain inlets that could receive a discharge from the construction site must be protected before construction begins and must be maintained until the site is finally stabilized.

**Problem #5—No BMPs to minimize vehicle tracking onto the road**
Vehicle exits must use BMPs such as stone pads, concrete or steel wash racks, or equivalent systems to prevent vehicle tracking of sediment.

**Problem #6—Improper solid waste or hazardous waste management**
Solid waste (including trash and debris) must be disposed of properly, and hazardous materials (including oil, gasoline, and paint) must be properly stored (which includes secondary containment). Properly manage portable sanitary facilities.

**Problem #7—Dewatering and other pollutant discharges at the construction site**
Construction site dewatering from building footings or other sources should not be discharged without treatment. Turbid water should be filtered or allowed to settle.

**Problem #8—Poorly managed washouts (concrete, paint, stucco)**
Water from washouts must not enter the storm drain system or a nearby receiving water. Make sure washouts are clearly marked, sized adequately, and frequently maintained.

**Problem #9—Inadequate BMP maintenance**
BMPs must be frequently inspected and maintained if necessary. Maintenance should occur for BMPs that have reduced capacity to treat stormwater (construction general permits or state design manuals often contain information on when BMPs should be maintained), or BMPs that have been damaged and need to be repaired or replaced (such as storm drain inlet protection that has been damaged by trucks).

**Problem #10—Inadequate documentation or training**
Failing to develop a SWPPP, keep it up-to-date, or keep it on-site, are permit violations. You should also ensure that SWPPP documentation such as a copy of the NOI, inspection reports and updates to the SWPPP are also kept on-site. Likewise, personnel working on-site must be trained on the basics of stormwater pollution prevention and BMP installation/maintenance.

## E. Update and Evaluate Your SWPPP

Like your construction site, your SWPPP is dynamic. It is a document that must be amended to reflect changes occurring at the site. As plans and specifications change, those changes should be reflected in your SWPPP. If you find that a BMP is not working and you decide to replace it with another, you must reflect that change in your SWPPP. Document in your SWPPP transitions from one phase of construction to the next, and make sure you implement new BMPs required for that next phase.

### *Are Your BMPs Working?*

You should evaluate the effectiveness of your BMPs as part of your routine inspection process. An informal analysis of both your inspection's findings and your list of BMP repairs will often reveal an inadequately performing BMP. An inspection immediately after a rain event can indicate whether another approach is needed.

You may decide to remove an existing BMP and replace it with another, or you may add another BMP in that area to lessen the impact of stormwater on the original installation.

When you update your SWPPP, you can simply mark it up, particularly for relatively simple changes and alterations. More significant changes might require a rewriting of portions of the SWPPP. The site map should also be updated as necessary.

# Chapter 9: Final Stabilization and Permit Termination

▶ This chapter describes what you must do to stabilize your construction site and end permit coverage.

## Stabilize Disturbed Areas

As your construction project progresses, you must stabilize areas not under construction. EPA and most states have specific requirements and time frames that must be followed. Generally, it is a wise management practice to stabilize areas as quickly as possible to avoid erosion problems that could overwhelm silt fences, sediment basins, and other sediment control devices.

**SWPPP Tip!**

***Stabilize as soon as practicable***

EPA's Construction General Permit states that, "stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased."

Temporary stabilization can be achieved through a variety of BMPs, including mulching, seeding, erosion control blankets, hydroseeding, and other measures.

Permanent or final stabilization of areas on your site is generally accomplished by installing the final landscape requirements (e.g., trees, grass, gardens, or permanent stormwater controls). Once the site has been stabilized, you can terminate your permit coverage.

Sediment controls, such as silt fence, berms, sediment ponds or traps, alone, are not stabilization measures. You should continue to use these kinds of measures (e.g., silt fence around an area that has been seeded) until full stabilization is achieved.

## A. Final Stabilization

When you have completed your construction project or an area within the overall project, you must take steps to permanently and finally stabilize it. Check your permit for the specific requirements you must meet. After a project or an area in the project has been fully stabilized, you should remove temporary sediment and erosion control devices (such as silt fences). You might also be able to stop routine inspections in these stabilized areas. However, in some states such as Colorado, inspections are required every 30 days (after the construction has been completed and the site is stabilized) until permit coverage has been terminated. In general, you should be aware that

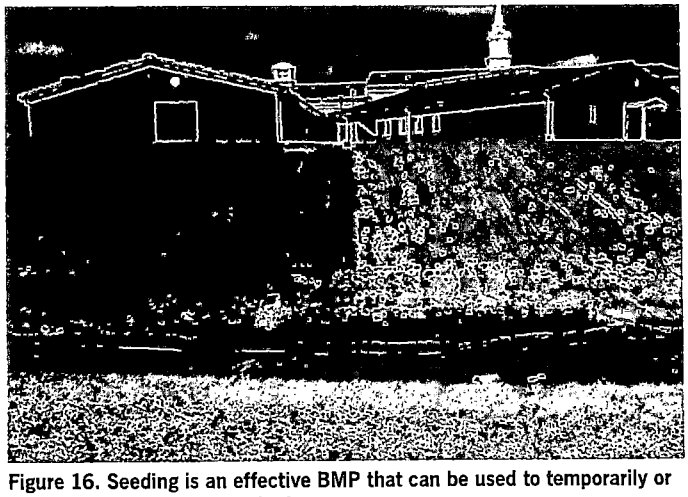


**Figure 16. Seeding is an effective BMP that can be used to temporarily or permanently stabilize disturbed areas.**

final stabilization often takes time (weeks or even months), especially during times of low rainfall or during the colder months of the year. You should not discontinue routine inspections until you have met the final stabilization requirements in your permit.

EPA and many states define final stabilization as occurring when a uniform, evenly distributed perennial vegetative cover with a density of 70 percent of the native background cover has been established on all unpaved areas and areas not covered by permanent structures. Some states have a higher percentage of vegetative cover required (e.g., New York requires 80 percent). Please review your state's construction general permit for specific requirements.

Native vegetation must be established uniformly over each disturbed area on the site. Stabilizing seven of ten slopes, or leaving an area equivalent to 30 percent of the disturbed area completely unstabilized will not satisfy the *uniform vegetative cover* standard.

The contractor must establish vegetation over the entire disturbed soil area at a minimum density of 70 percent of the native vegetative coverage. For example, if native vegetation covers 50 percent of the undisturbed ground surface (e.g., in an arid or semi-arid area), the contractor must establish 35 percent vegetative coverage uniformly over the entire disturbed soil area ($0.70 \times 0.50 = 0.35$ or 35 percent). Several states require perennial native vegetative cover that is *self-sustaining* and capable of providing *erosion control equivalent to preexisting conditions* to satisfy the 70 percent coverage requirement.

In lieu of vegetative cover, you can apply alternate measures that provide equivalent soil stabilization to the disturbed soil area. Such equivalent measures include blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles, or other erosion-resistant soil covering or treatments. Your construction general permit might allow all or some of these alternate measures for equivalent soil stabilization for final stabilization; check your general permit.

## B. Permit Termination

Once construction activity has been completed and disturbed areas are finally stabilized, review your general permit for specific steps to end your coverage under that permit. EPA and many states require you to submit a form, often called a notice of termination (NOT), to end your coverage under that construction general permit. Before terminating permit coverage, make sure you have accomplished the following:

- Remove any construction debris and trash
- Remove temporary BMPs (such as silt fence). Remove any residual sediment as needed. Seed and mulch any small bare spots. BMPs that will decompose, including some fiber rolls and blankets, may be left in place
- Check areas where erosion-control blankets or matting were installed. Cut away and remove all loose, exposed material, especially in areas where walking or mowing will occur. Reseed all bare soil areas
- Ensure that 70 percent of background native vegetation coverage or equivalent stabilization measures have been applied for final soil stabilization of disturbed areas
- Repair any remaining signs of erosion
- Ensure that post-construction BMPs are in place and operational. Provide written maintenance requirements for all post-construction BMPs to the appropriate party
- Check all drainage conveyances and outlets to ensure they were installed correctly and are operational. Inspect inlet areas to ensure complete stabilization and remove any brush or debris that could clog inlets. Ensure banks and ditch bottoms are well vegetated. Reseed bare areas and replace rock that has become dislodged
- Seed and mulch or otherwise stabilize any areas where runoff flows might converge or high velocity flows are expected
- Remove temporary stream crossings. Grade, seed, or re-plant vegetation damaged or removed
- Ensure subcontractors have repaired their work areas before final closeout

You might also be required to file an NOT if you transfer operational control to another

## Take a Closer Look...

**Is there a deadline to submit an NOT?**

Many states require a Notice of Termination (NOT) or similar form to indicate that the construction phase of a project is completed and that all the terms and conditions have been met. This notification informs the permitting authority that coverage under the construction general permit is no longer needed. If your permitting authority requires such a notification, check to see what conditions must be met in order to submit it and check to see if there is a deadline for submission. EPA's Construction General Permit requires that you submit an NOT when you have met all your permit requirements. The NOT is due no later than 30 days after meeting these requirements.

***What does this mean to me?***

*Check your permit carefully for details and conditions relating to terminating your permit coverage.*

party before the project is complete. The new operator would be required to develop and implement a SWPPP and to obtain permit coverage as described above.

EPA and most states allow homebuilders to terminate permit coverage when the property has been transferred to the homeowner with temporary or final stabilization measures in place. If the transfer is made with temporary stabilization measures in place, EPA expects the homeowner to complete the final landscaping. Under these circumstances, EPA and most states do not require homeowners to develop SWPPPs and apply for permit coverage.

## C. Record Retention

EPA's regulations specifies that you must retain records and reports required in the permit, including SWPPPs and information used to complete the NOI, for at least 3 years from the termination of coverage or expiration of the permit. You should also keep maintenance and inspection records related to the SWPPP for this same time frame. General permits issued by states may have a longer period for retention.

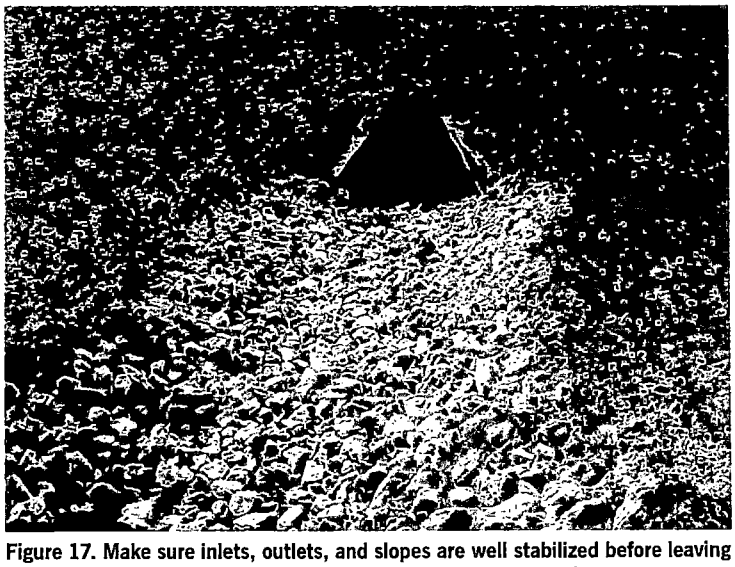


**Figure 17. Make sure inlets, outlets, and slopes are well stabilized before leaving the site and filing your "Notice of Termination" for ending permit coverage.**

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## Acknowledgements


The graphics used in this guide were developed by Tetra Tech, Inc. for the Kentucky Divison of Water's Erosion and Sediment Control Field Guide.

# Appendix A: **SWPPP Template**

An electronic copy of the SWPPP template is available on EPA's web site at:
**http://www.epa.gov/npdes/swpppguide**

# Appendix B: **Sample Inspection Report**

An electronic copy of the sample inspection report is available on EPA's web site at:
http://www.epa.gov/npdes/swpppguide

# Appendix C: **Calculating the Runoff Coefficient**

The following information is largely taken from EPA's 1992 guidance *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-005).

It is important to estimate your development's impact on runoff after construction is complete. This can be done by estimating the runoff coefficient for pre- and post-construction conditions. The runoff coefficient ("C" value) is the partial amount of the total rainfall which will be come runoff. The runoff coefficient is used in the "rational method" which is:

$$Q = CiA,$$

Where Q = the rate of runoff from an area,
i = rainfall intensity, and
A = the area of the drainage basin.

There are many methods which can be used to estimate the amount of runoff from a construction site. You are not required to use the rationale method to design stormwater conveyances or BMPs. Consult your State/local design guides to determine what methods to use for estimating design flow rates from your development.

The less rainfall that is absorbed (infiltrates) into the ground, evaporates, or is otherwise absorbed on site, the higher the "C" value. For example, the "C" value of a lawn area is 0.2, which means that only 20 percent of the rainfall landing on that area will run off, the rest will be absorbed or evaporate. A paved parking area would have a "C" value of 0.9, which means that 90 percent of the rainfall landing on that area will become runoff. You should calculate the runoff coefficient for conditions before construction and after construction is complete. It is suggested that a runoff coefficient be calculated for each drainage basin on the site. The following is an example of how to calculate the "C" value.

The runoff coefficient or "C" value for a variety of land uses may be found in Table C-1 (NOTE: Consult your State/local design guide, if available, to determine if specific "C" values are specified for your area). The "C" values provide an estimate of anticipated runoff for particular land uses. Most sites have more than one type of land use and therefore more than one "C" value will apply. To have a "C" value that represents your site you will need to calculate a "weighted C value."

## Calculating a "Weighted C value"

When a drainage area contains more than one type of surface material with more than one runoff coefficient a "weighted C" must be calculated. This "weighted C" will take into account the amount of runoff from all the various parts of the site. A formula used to determine the "weighted C" is as follows:

$$C = \frac{A_1C_1 + A_2C_2 + \ldots + A_xC_x}{(A_1 + A_2 + \ldots + A_x)}$$

Where A = acres and C = coefficient.

Therefore, if a drainage area has 15 acres (ac.) with 5 paved acres (C = 0.9), 5 grassed acres (C = 0.2), and 5 acres in natural vegetation (C = 0.1), a "weighted C" would be calculated as follows:

$$C = \frac{(5 \text{ ac} \times 0.9) + (5 \text{ ac} \times 0.2) + (5 \text{ ac} \times 0.1)}{(5 \text{ ac} + 5 \text{ ac} + 5 \text{ ac})} = 0.4$$

Table C-1. Typical "C" Values

| Description of Area | Runoff Coefficients |
|---|---|
| Business | |
| Downtown Areas | 0.70 – 0.95 |
| Neighborhood Areas | 0.50 – 0.70 |
| Residential | |
| Single-family areas | 0.30 – 0.50 |
| Multi-units, detached | 0.40 – 0.60 |
| Multi-units, attached | 0.60 – 0.75 |
| Residential (suburban) | 0.25 – 0.40 |
| Apartment dwelling areas | 0.50 – 0.70 |
| Industrial | |
| Light Areas | 0.50 – 0.80 |
| Heavy Areas | 0.60 – 0.90 |
| Parks, cemeteries | 0.10 – 0.25 |
| Playgrounds | 0.20 – 0.35 |
| Railroad yard areas | 0.20 – 0.40 |
| Unimproved areas | 0.10 – 0.30 |
| Streets | |
| Asphalt | 0.70 – 0.95 |
| Concrete | 0.80 – 0.95 |
| Brick | 0.70 – 0.85 |
| Drives and Walks | 0.75 – 0.85 |
| Roofs | 0.75 – 0.95 |
| Lawns – course textured soil (greater than 85% sand) | |
| Slope: Flat, 2% | 0.05 – 0.10 |
| Average, 2-7% | 0.10 – 0.15 |
| Steep, 7% | 0.15 – 0.20 |
| Lawns – fine textured soil (greater than 40% clay) | |
| Slope: Flat, 2% | 0.13 – 0.17 |
| Average, 2-7% | 0.18 – 0.22 |
| Steep, 7% | 0.25 – 0.35 |

# Appendix D: **Resources List**

The following are just a few of the many resources available to assist you in developing your SWPPP. The inclusion of these resources does not constitute an endorsement by EPA.

## EPA Resources

EPA Stormwater Construction Website
**http://www.epa.gov/npdes/stormwater/construction**

- EPA's Construction General Permit (**http://www.epa.gov/npdes/stormwater/cgp**)
  *EPA's general permit that applies to all construction activity disturbing greater than one acre in the states and territories where EPA is the permitting authority.*
- Construction SWPPP Guide, SWPPP Template and inspection form
  (**www.epa.gov/npdes/swpppguide**)
  *A downloadable copy of this guide, the SWPPP template and inspection form.*
- Menu of BMPs (**http://www.epa.gov/npdes/stormwater/menuofbmps**)
  *Site containing over 40 construction BMP fact sheets. Also contains fact sheets on other stormwater program areas, and case studies organized by program area.*

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
**http://www.epa.gov/owow/nps/urbanmm/index.html**

Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development
**http://www.epa.gov/compliance/resources/publications/assistance/sectors/constructmyer/index.html**

Expedited Settlement Offer Program for Stormwater (Construction)
**http://www.epa.gov/Compliance/resources/policies/civil/cwa/esoprogstormwater.pdf**
*A supplemental program to ensure consistent EPA enforcement of stormwater requirements at construction sites for relatively minor violations.*

Construction Industry Compliance Assistance
**http://www.cicacenter.org**
*Plain language explanations of environmental rules for the construction industry. Links to stormwater permits and technical manuals for all 50 states.*

## Smart Growth and Low Impact Development Resources

Using Smart Growth Techniques as Stormwater Best Management Practices
**http://www.epa.gov/livablecommunities/pdf/sg_stormwater_BMP.pdf**

Stormwater Guidelines for Green, Dense Development
**http://www.epa.gov/smartgrowth/pdf/Stormwater_Guidelines.pdf**

Protecting Water Resources with Smart Growth
**http://www.epa.gov/smartgrowth/pdf/waterresources_with_sg.pdf**

Parking Spaces / Community Places: Finding the Balance Through Smart Growth Solutions
**http://www.epa.gov/smartgrowth/parking.htm**

EPA Nonpoint Source Low Impact Development site
**http://www.epa.gov/owow/nps/lid/**

Better Site Design: A Handbook for Changing Development Rules in Your Community
Available from **http://www.cwp.org**

## State BMP/Guidance Manuals

Kentucky Erosion Prevention and Sediment Control Field Guide
http://www.water.ky.gov/permitting/wastewaterpermitting/KPDES/storm/
*Easy to read field guide describing erosion and sediment control BMP selection, installation and maintenance.*

Minnesota Stormwater Construction Inspection Guide
http://www.pca.state.mn.us/publications/wq-strm2-10.pdf
*A manual designed to assist municipal construction inspectors in the procedures for conducting a compliance inspection at construction sites.*

California Stormwater Quality Association's Construction Handbook
http://www.cabmphandbooks.org/Construction.asp

Delaware Erosion and Sediment Control Handbook
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/Stormwater/StormWater.htm

Western Washington Stormwater Management Manual – Volume II – Construction Stormwater Pollution Prevention
http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Eastern Washington Stormwater Management Manual
http://www.ecy.wa.gov/biblio/0410076.html
*A guidance document addressing stormwater design and management in more arid climates.*

## Certification Programs

Certified Professional in Erosion and Sediment Control
http://www.cpesc.org

Virginia Erosion and Sediment Control Certification Program
http://www.dcr.virginia.gov/sw/estr&crt2.htm

Florida Stormwater, Erosion and Sedimentation Control Inspector Certification
http://www.dep.state.fl.us/water/nonpoint/erosion.htm

## Other Resources

International Erosion Control Association
http://www.ieca.org
*A non-profit organization helping members solve the problems caused by erosion and its byproduct—sediment.*

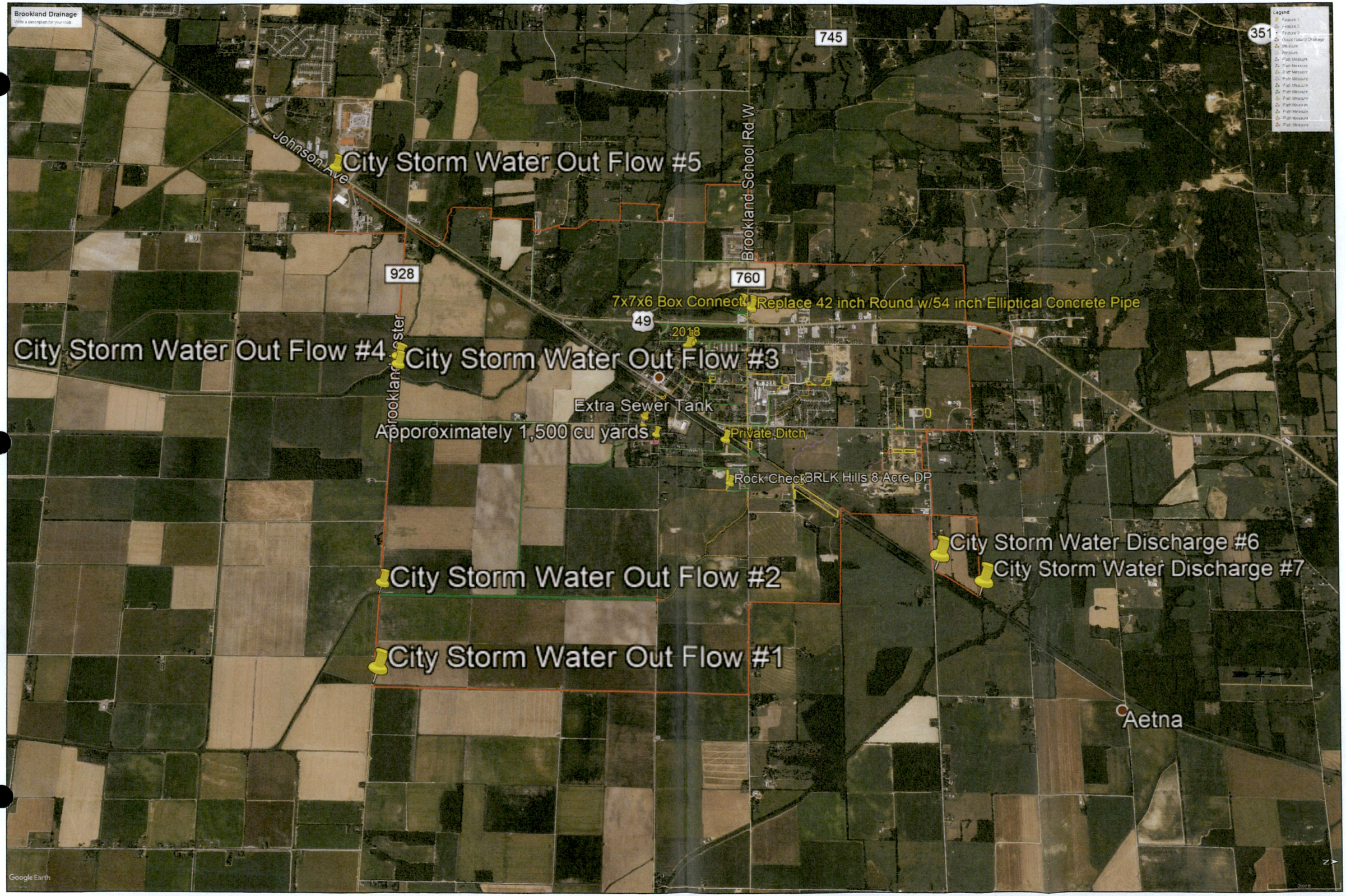
Erosion Control Magazine
http://www.erosioncontrol.com
*A journal for erosion and sediment control professionals.*

Designing for Effective Sediment & Erosion Control on Construction Sites by Jerald S. Fifield, PH.D., CPESC.
Available from Forester Press
http://www.foresterpress.com
*Book describing proven and practical methods for minimizing erosion and sedimentation on construction sites.*

Stormwater Permitting: A Guide for Builders and Developers by National Association of Home Builders (NAHB).
Available from NAHB http://www.nahb.org

# APPENDIX B

## City of Brookland Storm Sewer Map


Brookland Drainage
Write a description for your map.
Legend
745
351
928
760
49
Johnson Ave
Brookland-School Rd W
Brookland-Manchester
City Storm Water Out Flow #5
City Storm Water Out Flow #4
City Storm Water Out Flow #3
City Storm Water Out Flow #2
City Storm Water Out Flow #1
7x7x6 Box Connect
Replace 42 inch Round w/54 inch Elliptical Concrete Pipe
2018
Extra Sewer Tank
Apporoximately 1,500 cu yards
Private Ditch
Rock Check
3RLK Hills 8 Acre DP
City Storm Water Discharge #6
City Storm Water Discharge #7
Aetna
Google Earth

Purple – Ditch on private property
Green – Ditch that has been cleaned
Red – Culverts that have been change out
Yellowish Brown – Ditches and Culverts that have not been changed or cleaned
Yellow – Detention Ponds
Grey – Slow down water weirs
Pink – Scheduled Detention Pond and Ditch Work

# APPENDIX C

## Examples of Materials Used for Illicit Discharge Training

# Illicit Discharge Detection and Elimination

Materials taken from
EPA Office of Wastewater Management webcast titled:

Developing your IDDE Program found on EPA's web site

## What is an Illicit Discharge?

- A discharge to an MS4 that is not composed entirely of storm water except permitted discharges and fire fighting related discharges

  40 CFR 122.26(b)(2)

  - Unique frequency, composition & mode of entry
  - Interaction of the sewage disposal system & the storm drain system
  - Produced from "generating sites"

## Why is an Illicit Discharge a Problem?

Stormwater generally flows to waterways without any additional treatment.

Illicit discharges often contain pathogens, nutrients, surfactants, and toxic pollutants.

## What is an Illicit Discharge Detection and Elimination Program?

A comprehensive program of various elements that assist the Phase II MS4 in detecting, identifying, regulating, controlling and/or eliminating illicit discharges. Illicit discharges include illegal dumping to the storm sewer system (e.g., used oil).

## What is a Storm Sewer?

*A municipal separate storm sewer system (MS4) is…*

A conveyance or system of conveyances owned by a state, city, town, or other public entity that discharges to waters of the U.S. and is:

designed or used for collecting or conveying stormwater

not a combined sewer

not part of a Publicly Owned Treatment Works (POTW)

## Discharge Frequency

- **Continuous discharges**
  - Occur ***most or all of the time***
- **Intermittent discharges**
  - Occur over a ***shorter period of time*** (e.g., a few hours per day or a few days per year)
- **Transitory discharges**
  - ***Occur rarely***, usually in response to a singular event such as an industrial spill, ruptured tank, sewer break, transport accident or illegal dumping episode

## Discharge Flow Types

- Sewage & septage flows
- Washwater flows
- Liquid wastes
- Tap water *
- Landscape irrigation flows *
- Groundwater & spring water flows *

* Not typically considered illicit

## Mode of Entry

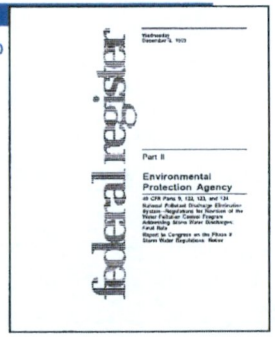
- ***Direct entry***
  - Sewage, industrial, commercial cross-connection
  - Straight pipe
- ***Indirect entry***
  - Groundwater seepage
  - Spills
  - Dumping
  - Outdoor washing activities
  - "Nuisance" or non-target water

## Land Use & Potential Generating Sites

- Residential
- Commercial
- Industrial
- Institutional
- Municipal

## Phase II Program Requirements (Source: 64 FR 68722 – December 8, 1999)

- Storm sewer system map
- Regulatory mechanism (e.g. ordinance) to prevent illicit discharges
- Plan to detect & address non-storm water discharges
- Education
- Measurable goals




## Program Requirement – System Map

- **Evaluate and update the storm sewer system map**
  - **System components including pipes down to (e.g., 12 inch) diameter, inlets, discharge points, manholes, treatment**
  - **Water bodies**
  - **GIS**
  - **Added detail (e.g., system repair/cleaning, industry information)**
- **Purpose is to identify source, track, and contain dry weather flows**
- **Visual verification**

## Common IDDE Program Mapping Elements

- Storm sewers (96%)
- Waters of the US receiving discharges from outfalls (83%)
- Outfalls (79%)
- Open channels (71%)
- Land use (67%)
- Sanitary sewers (63%)
- Industrial discharge permit holders (33%)
- Building connections to storm sewers (25%)
- Connections to adjacent systems (25%)
- Building connections to sanitary sewers (21%)
- Watershed, outfall drainage area boundaries (13%)
- Hotspot areas (13%)

## Program Requirement – Regulatory Mechanism

Evaluate and update the legal authority to prohibit illicit discharges

- Ensure an ability to enforce against illicit discharges
  - Civil actions
  - Criminal actions
- Ensure an ability to enter private property, conduct inspections, and collect documents
- Ensure an ability to prohibit and enforce against illicit discharges from contributing storm sewer systems (e.g., adjacent municipalities, other MS4s, private systems)

## Common Legal Authority Approaches

- Stormwater Ordinance
  - addresses inappropriate discharges to the storm sewer system or receiving waters
- Plumbing Code
  - addresses illegal connections to the storm sewer system
- Health Code
  - regulates the discharge of harmful substances to the storm sewer system or receiving waters

## Program Requirement – Implement Plan

Implement a plan to detect and address illicit discharges

- Locate problem areas such as older areas of storm sewer system through visual inspections, monitoring dry-weather discharges, complaint response, field staff observations
- Find the source using dye and smoke-testing, tracking, inspections, and video
- Remove/correct illicit connection by notification and correction requirements

## Program Requirement – Implement Plan (continued)

Implement a plan to detect and address illicit discharges (continued)

- Document actions taken such as outfalls screened, complaints responded to, dry-weather discharges identified and corrected
- Determine appropriate Best Management Practices
- Implement Measurable Goals for program evaluation and assessment

## Best Management Practices

**Illicit Discharge Detection and Elimination Program Development**

- Reducing SSOs

**Trash and Illegal Dumping**

- Used oil recycling
- Illegal dumping controls
- Trash management

**Decentralized Wastewater**

- Preventing septic tank failure
- Sewage from recreational activities

## Investigative Methods

- Most of the jurisdictions use **several** different methods
- Initial **outfall screening** successful at identifying **chronic problems**
- For **sporadic discharges**, jurisdictions are relying heavily on **hotlines** and **cross-training of staff**
- **Special studies**, **in-stream monitoring** and **targeted problem area screening** supplement efforts

## Outfall Monitoring

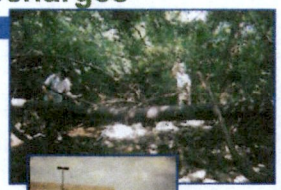
- Most IDDE programs conduct major outfall monitoring on a "regular basis":
  - Screen each major outfall at least once over the NPDES Phase I permit cycle (5 years)
  - Screen each major outfall at least once a year
  - Screen major outfalls in the MS4 on a staggered schedule, based on contributing land use & history of chronic problems

## Most Common Approach to Outfall Screening

- **Visual inspection** of the outfall
- **Qualitative** assessment of any flow present, including examination of water color, odor, turbidity, floatables, & sedimentation
- Follow-up grab sample for **quantitative** analysis, either using more sophisticated field equipment or a laboratory

Many jurisdictions bypass the quantitative tests and immediately go ***"up the trunk"*** to find the source of the discharge

## Sources of Illicit Discharges



- Illegal dumping practices (95%)
- Broken sanitary sewer line (81%)
- Cross-connections (71%)
- Connection of floor drains to storm sewer (62%)
- Sanitary sewer overflows (52%)
- Inflow / infiltration (48%)
- Straight pipe sewer discharge (38%)
- Failing septic systems (33%)
- Improper RV waste disposal (33%)
- Pump station failure (14%)

## Problems in Finding Illicit Discharges

Source Related
- Periodic nature
- Illegal dumping / one-time dischargers
- Illegal connections
- I/I from sanitary sewers
- After-hours discharges

Program Related
- Map accuracy
- Timeliness of complaint
- Insufficient staff
- Lack of expertise
- Slow laboratory analysis
- Unreliable equipment
- Unreliable indicators

Infrastructure Related
- Access (building, stream, outfall, traffic)
- Complexity, size of storm drain network
- Tides and groundwater
- Blended flow types
- Multiple sources w/in system


## Program Requirement - Education

Implement an education program on the hazards of illicit discharges

- Provide public education
- Conduct storm drain stenciling
- Establish a hotline for public reporting
- Establish a website
- Develop educational materials
- Use volunteers
- Initiate recycling

## IDDE Education Target Audiences

- Resident Education (100%)
  - Storm drain stenciling, outfall signage, hotline promotion
- Schoolchildren
  - School presentations
- Commercial (95%) / Industrial (79%)
  - Targeted at "hotspot" activity
- Public Employees (63%)
  - Field crew & inspector cross-training

Source: NVRC (Four Mile Run)

## Program Requirement - Measurable Goals

Implement measurable goals to allow evaluation of the Illicit Discharge Detection and Elimination program effectiveness.

## Measurable Goals Examples

### Identifying Illicit Connections

- Inventory conducted and sites prioritized for inspection
- Number of field test in high-risk areas
- Was an ordinance developed to allow entrance into private buildings
- Number of illicit connections reported by business employees
- Number of illicit connections found
- Number of illicit connections corrected
- Number of new buildings inspected

## Measurable Goals Examples

### Illegal Dumping

- Number of flyers, posters, or public education tools distributed
- Number of illegal dumps reported by citizens
- Number of penalties enforced upon participants of illegal dumps
- Was an inventory of prime areas for illegal dumping completed
- Number of rewards to citizens for reporting an illegal dump
- Number of illegal dump clean-ups completed

## Measurable Goals Examples

### Sanitary Sewer Overflows

- Frequency of routine maintenance and cleaning activities
- Number of overflows reported
- Number of overflow causes that were identified during inspections
- Number of sites repaired
- Number of rain gauges installed
- Was an ordinance developed to prohibit new and illicit connections

## Measurable Goals Examples

### Wastewater Connections to Storm Sewer System

- Number of rerouted connections
- Number of dry weather monitoring activities performed
- Was an inventory and prioritization of potential connection sites completed
- Number of field tests in high-risk areas
- Number of unwarranted connections reported
- Number of connections found
- Number of connections corrected
- Changes in water quality at re-routed outfalls and high-risk areas

## Measurable Goals Examples

### Industrial/Business Connections

- Number of dry weather tests completed
- Number of high-risk connections prioritized
- Number of codes developed to prohibit connections
- Number of survey responses indicating a possible illicit connection
- Number of illicit connections found
- Number of illicit connections corrected
- Number of new buildings inspected
- Was an ordinance developed for mandatory inspections of new buildings

## Measurable Goals Examples

### Failing Septic Systems

- Number of regular maintenance and inspection reminders issued to tank owners
- Number of partnerships formed with private pumping companies
- Was an inventory of tanks and when last serviced completed
- Number of field tests and screening conducted
- Number of post construction inspections to ensure proper installation
- Number of scheduled pump-outs and routine maintenance work conducted

## Measurable Goals Examples

### Recreational Sewage

- Was an inventory of high-risk areas completed
- Number of pump-out stations installed
- Amount of wastewater that pump-out stations collect
- Number of no-discharge areas created
- Number of new signs to remind citizens of dumping policies an alternatives
- Number of enforced cases of recreational dumping
- Number of citizen complaints received
- Change in water quality at marinas

## Primary Conclusions

- Experienced field staff is a valuable asset.
- Budgets drive methods used to identify potential inappropriate discharges.
- Effective and comprehensive legal authority is critical.
- A good program starts with good mapping.
- Much of the field equipment is commonly available in various municipal departments.

## What this means for Phase II

- Staffing and training
- Ordinance language
- Mapping of storm sewers, open drainage channels, waters of the US, outfalls, and land use
- Outfall screening
- Cross-training and communication
- Accurate, cost effective, and safe methodologies
- Hotlines and other education/outreach efforts


## Audit Existing Resources & Programs

Purpose:

- Determine the most capable local agency to run program
- Identify available staffing, resources and gaps
- Understand local resources, expertise that can be applied

Desired Outcome:

- Initial five year IDDE program development plan over the current permit cycle

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Audit Elements

- Infrastructure profile
- Legal authority
- Available mapping
- Field staff
- Access to lab services
- Education & outreach resources
- Discharge removal capability
- Program budget & financing

Potential Infrastructure Profile Questions:
How many miles of streams and storm drains exist in the MS4?
What is the area served by storm drains, sewers, and septics?
What is the general age and condition of the infrastructure?

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Establish Responsibility & Authority

Purpose:

- Establish authority to regulate, respond to & enforce discharges
- Prohibit inappropriate connections
- Develop reporting & tracking system

Desired Outcome:

- Local ordinance
- Internal & external reporting & tracking system

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Illicit Discharge Ordinances

- Prohibit illicit discharges & illegal connections
- Provide for access & inspection
- Require & enforce elimination
- Address unique conditions or requirements

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Complete Desktop Assessment of Illicit Discharge Potential

Purpose:

- Determine the potential severity for illicit discharges
- Identify which subwatersheds or generating land uses merit priority investigation

Desired Outcome:

- Screening of problem subwatersheds
- Outfall tracking system
- Assessment of severity of illicit discharge problems
- Basic mapping

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Screening Factors

- Past Discharge Complaints
- Poor Dry Weather Water Quality
- Density of Generating Sites
- Density of Industrial NPDES Permits
- Stormwater Outfall Density
- Age of Subwatershed Development
- Former Combined Sewers
- Older Industrial Operations
- Aging or Failing Sewers
- Density of Older Septic Systems
- Past Sewer Conversions

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Develop Program Goals & Strategies

Purpose:

- Define milestones to measure progress during 1st permit cycle
- Ensure resources allocated to address real problems
- Choose most appropriate & cost-effective methods to find discharges

Desired Outcome:

- Program goals, measurable indicators & implementation strategies for:
  - Overall program administration
  - Outfall assessment
  - Finding and fixing illicit discharges
  - Prevention of illicit discharges

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Refining Strategies to Address Unique Conditions… Aging Septic Infrastructure

- Develop targeted education program for septic system maintenance
- Institute a point of sale inspection and verification process
- Develop cost share capabilities to assist property owners with upgrade of system

For more information:
**Decentralized Wastewater Treatment Systems: A Program Strategy**
www.epa.gov/owm/septic/pubs/septic_program_strategy.pdf

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Search for Illicit Discharge Problems in the Field

Purpose:

- Conduct rapid field screening of all outfalls in priority subwatersheds
- Conduct indicator monitoring at suspect outfalls to characterize flow types & trace sources

Desired Outcome:

- Locations & characterizations of all outfalls
- Design & implementation of indicator monitoring strategy
- Local "fingerprint" library

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Outfall Reconnaissance Inventory (ORI)

- Map, mark & photograph outfalls
- Record basic characteristics
- Look for physical indicators
- Conduct simple monitoring at flowing outfalls

Photo Source: R. Frymire

### Benchmark Concentrations to Identify Industrial Discharges

| Benchmark | Concentration | Notes |
|---|---|---|
| Ammonia (mg/L) | ≥ 50 | • Existing "Flow Chart" Parameter<br>• Concentrations higher than the benchmark can identify a few industrial discharges |
| Potassium (mg/L) | ≥ 20 | • Existing "Flow Chart" Parameter<br>• Excellent indicator of a broad range of industrial discharges |
| Color (Units) | ≥ 500 | • Supplemental parameter that identifies a few specific industrial discharges |
| Conductivity (µS/cm) | ≥ 2,000 | • Identifies a few industrial discharges<br>• May be useful to distinguish between industrial sources |
| Hardness (mg/L as $CaCO_3$) | ≤ 10<br>≥ 2,000 | • Identifies a few industrial discharges<br>• May be useful to distinguish between industrial sources |
| pH (Units) | ≤ 5 | • Only captures a few industrial discharges<br>• High pH values may also indicate an industrial discharge but residential wash waters can have a high pH as well |
| Turbidity (NTU) | ≥ 1,000 | • Supplemental parameter that identifies a few specific industrial discharges |

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Special Indicators for Intermittent Discharges

- Optical brightener monitoring
- Toxicity testing
- Outfall damming
- Take a sample from the pool

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Isolate & Fix Illicit Discharges

Purpose

- Use a variety of tools & techniques to narrow down the source of illicit discharges & correct the problem
- Establish an appropriate & effective enforcement program to ensure repair

Desired Outcome:

- Finding & fixing illicit discharges is the core goal
- Ancillary outcomes:
  - Reduced incidences of illicit discharges = improved water quality
  - Increased homeowner & business awareness
  - Tracking system to document problems & repairs & identify repeat offenders

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | **Isolate & Fix Discharges** | Prevent Discharges | Evaluate Program

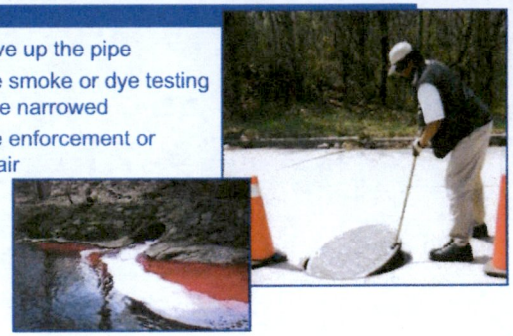
## Discharge Complaint Hotline

- Leads to early detection & correction
- Encourages active public stewardship
- Can "piggyback" on other call response needs
- Identifies suspected facilities for further investigation & education
- Increases municipal accountability
- Good tool to pick up intermittent and transitory discharges
- Time & money to provide 24/7 service
- Marketing the hotline number
- Establishing inter- & intra-departmental response process

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | **Isolate & Fix Discharges** | Prevent Discharges | Evaluate Program

## Finding and Fixing

- Move up the pipe
- Use smoke or dye testing once narrowed
- Use enforcement or repair



Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | **Isolate & Fix Discharges** | Prevent Discharges | Evaluate Program

## Techniques to Locate the Discharge


Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | **Isolate & Fix Discharges** | Prevent Discharges | Evaluate Program

## Fixing Illicit Discharges

- Who is responsible?
- What methods will be used to repair?
- How long will the repair take?
- How will removal be confirmed?

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | **Prevent Discharges** | Evaluate Program

## Prevent Illicit Discharges

Purpose:

- Identify location & regulatory status of generating sites
- Screen for bad actors
- Target appropriate education & enforcement efforts

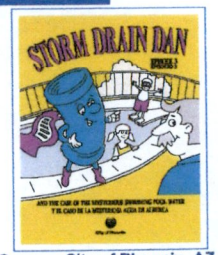
Desired Outcome:

- Local prevention programs targeting common intermittent and transitory discharges
- Target: neighborhoods, generating sites, and municipal housekeeping

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | **Prevent Discharges** | Evaluate Program

## IDDE Education Target Audiences

- Resident Education
  - Storm drain stenciling, outfall signage, hotline promotion, school presentations
- Commercial and Industrial Hotspots
- Public Employees
  - Field crew & inspector cross-training




Source: City of Phoenix, AZ

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Evaluate the Program

Purpose:

- Review progress made in meeting measurable program goals
- Revise program as necessary to ensure elimination of illicit discharges in most cost-effective way

Desired Outcome:

- Updated tracking database
- Annual report with summary of progress to date, findings, recommendations for program revisions, & work plan for upcoming year

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Fundamental units to track are individual outfalls…

- Geospatial coordinates
- Subwatershed & watershed address
- Contributing land use
- Diameter & physical characteristics
- Field assessment data
- Digital photos
- Follow-up monitoring at outfall or further up pipe
- Hotline complaints, along with response
- Status & disposition of enforcement actions
- Maintenance & inspection data

Audit | Authority | Desktop Assessment | Goals & Strategies | Search for Discharges | Isolate & Fix Discharges | Prevent Discharges | Evaluate Program

## Program Tracking Systems

- Updated mapping to reflect locations of illicit discharges and problems
- Water quality results associated with specific outfall and in-stream sampling
- Frequency of hotline use
- Number of "hits" or confirmed illicit discharges
- Program costs by line item
- Number of corrections and associated cost

## Top 15 Tips for Effective IDDE Programs

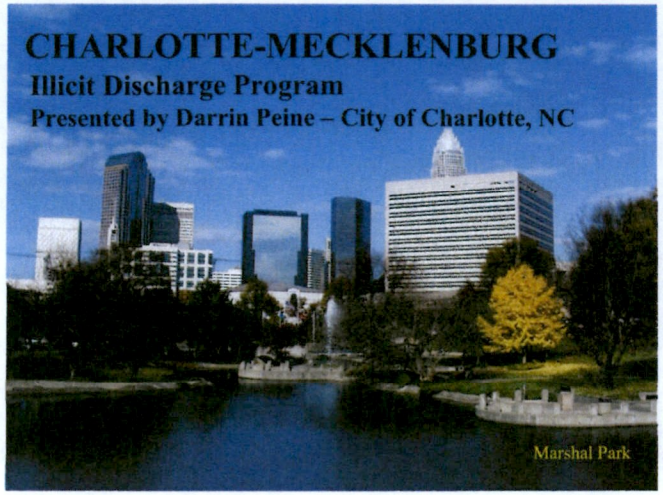
1. Go after *continuous sewage discharges* first
2. Put together an *interdisciplinary and interagency* IDDE development team
3. Educate *everybody* about illicit discharges
4. Understand your *infrastructure*
5. Walk *all of your streams* in the first permit cycle

## Top 15 Tips for Effective IDDE Programs

6. Use GPS to create your *outfall map*
7. Don't develop a monitoring plan until you *understand your discharges*
8. Utilize a *simple outfall tracking system* to organize your data
9. Outsource some functions to *local watershed groups*
10. Utilize a *hotline* as an education and detection tool

## Top 15 Tips for Effective IDDE Programs

11. *Cross-train* all local inspectors
12. *Target* your precious storm water education dollars
13. Stress *public health and safety benefits* of sewage-free streams
14. Calibrate your program resources to the *magnitude of your problem*
15. Think of discharge prevention as a *tool of watershed restoration*




## Presentation Outline

- **Introduction to Charlotte's IDDE Program and Examples of Illicit Discharges Found in Charlotte Since the Program Began**
- **IDDE Detection Methods used in Charlotte**
  - **Public Awareness**
  - **Stream Monitoring**
  - **Stream Walking**
  - **Industrial Inspections**
  - **Infrared Aerial Photography**
- **Charlotte-Mecklenburg IDDE Elimination Methods**

Charlotte-Mecklenburg STORM WATER Services

http://stormwater.charmeck.org

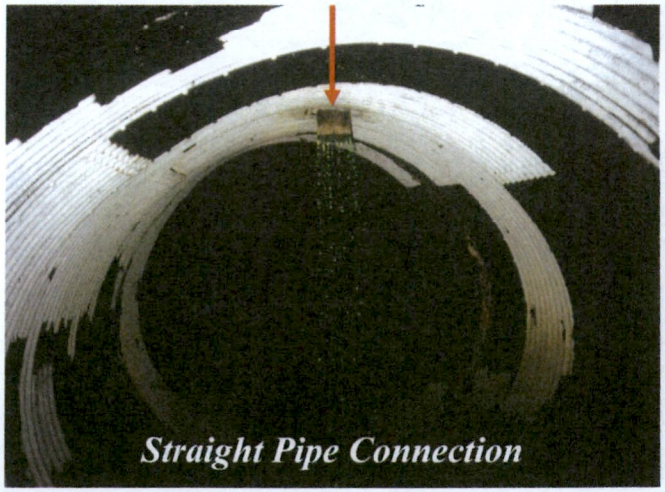
## Introduction to Charlotte-Mecklenburg's Illicit Discharge Program

•Program began in 1995, Staff Implemented

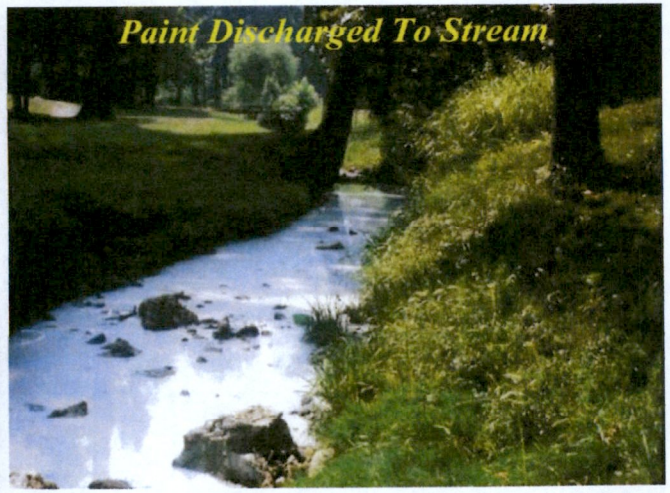
•Originally Funded through Local Tax Dollars, Currently Funded through Stormwater Utility Fees

•Budget of Approx. $600,000 annually

•Charlotte-Mecklenburg 2006 Population of 850,000 persons





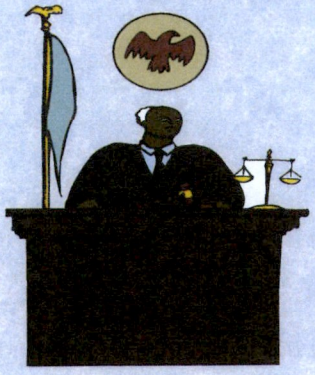


Infrared Aerial Photograph of a Leaking Sanitary Sewer Line


Leaking Sewer Collection Line

DURING REPAIRS

## Charlotte-Mecklenburg IDDE Elimination Methods



*Verbal Notice Of Violation*

*Written Notice Of Violation*

*Enforcement*

# APPENDIX D

## Confirmed Illicit Discharge Response Documentation

## ILLICIT DISCHARGE DETECTION & ELIMINATION (IDDE)

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Cite Local Code(s) Being Used (If available, web link for code(s)) | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|
| Ordinance or Other Regulatory Mechanism<br><br>Included in Ordinance #2009-1 and SWD Commission — Mayor | 2010-2011<br>2011-2012<br>2012-2013<br>2013-2014<br>2014-2015<br>2015-2016<br>2016-2017<br>2018-2019 | Include Illicit Discharge Detection and Elimination language and enforcement in the new Ordinance | Yes | Supported by City of Brookland Ordinance # 2009-1 | City of Brookland Ordinance 2009-1 does include language outlining Illicit Discharge Detection and Elimination, as well as penalties for violations | Yes |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|
| Storm Sewer System Map | 2010-2011 | Maintain accurate Storm Sewer System Map in the SWMP. Review at least annually, and update were necessary. | Yes | Worked with outside Engineering Firm to update copies of the Storm Sewer System Map. New Copies have been inserted in the SWMP. | Yes |
| | 2011-2012 | | | Reviewed the Storm Sewer System Map which was updated last year. Current copy is still accurate | |
| | 2012-2013 | | | Reviewed the Storm Sewer System/Drainage Map which was updated last year. Made considerable updates to the Storm Sewer/Drainage Map. A copy of the updated map is available at the City Hall. | |
| Include current Storm Sewer System Map in the SWMP and SWD Commission — Mayor | 2013-2014 | Maintain accurate Storm Sewer System/Drainage Map in the SWMP. Review at least annually, and update were necessary. | | Reviewed the Storm Sewer System/Drainage Map with Civil Engineering Firm, LLC (Jonesboro), and we are in the process of updating the map to include the new annexation area. A copy of the map is available at the City Hall. | |
| | 2014-2015 | | | | |
| | 2015-2016 | | | | |
| | 2016-2017 | | | | |
| | 2018-2019 | | | The City of Brookland updates the MS4 Drainage Map as work is completed each year. The City of Brookland has worked with Civil Engineering Associates, LLC (Jonesboro), to review and update the Storm Sewer Map, in accordance with the requirements of section 3.2.3.2 of the Permit. A copy of the current map will be included in the City's updated Storm Water Management Plan, which will be submitted to ADEQ along with this Report. Finally, a copy of the current map is also available at the City Hall. | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|
| IDDE Plan | 2010-2011 | Provide IDDE training for all city police officers, the Mayor, SWD Commission members and the City Inspector. Initiate IDD inspections on at least a monthly basis | No | IDDE Training for the target groups has been completed, using materials contained in our SWMP. IDD monthly inspections have not been initiated at this time. | No |
| | 2011-2012 | Provide IDDE training for all city police officers, the Mayor, SWD Commission members and the City Inspector. | | IDDE Training for the target groups has been completed, using materials contained in our SWMP. Some IDD inspections have been completed, however, these inspections are not being conducted on a routine basis at this time. | |
| | 2012-2013 | | | IDDE Training for the target groups has been completed, using materials contained in our SWMP. IDD inspections are completed on a quarterly basis with available resources. No illicit discharges were identified during this reporting period, however, we did identify one area between two homes on Highway 49 B. where motor oil had been dumped between them. ADEQ Field Inspector Brent Walker was contacted, along with Craighead County OEM Rep. David Moore. After investigation, no tickets were written. Area was cleaned up by using oil absorbent booms to remove floating oil on water. Sand applied to dirt to soak up remaining residue. Dirt and sand removed by shovel and put on tarp to dry. Once dried, this material was disposed of by placing in trash container. | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2013-2014 | Initiate IDD inspections on a quarterly basis. | | IDDE Training for the target groups has been completed, using materials contained in our SWMP. IDD inspections are completed on a quarterly basis with available resources. No illicit discharges were identified during this reporting period. | | | | |
| Implement the IDDE Plan using available resources. Mayor and SWD Commission | | 2014-2015 | | | IDDE Training for the target groups has been completed, using materials contained in our SWMP. IDD inspections are completed on a quarterly basis with available resources (City Police and City Inspector). No illicit discharges were identified during this reporting period. | | | | |
| | | 2015-2016 | | | | | | | |
| | | 2016-2017 | | | | | | | |
| | | 2018-2019 | Provide IDDE training for Mr. Shawn Dacus, the new Code Enforcement Officer responsible for Storm Water Inspections and compliance. Previously, all city police officers, the Mayor, SWD . Commission members and the City Inspector received this same training. Initiate IDD inspections on a quarterly basis. | Yes | Mr. Shawn Dacus attended a Storm Water Inspection Workshop on March 21st, 2018 in Hot Springs. Mr. Dacus completes IDD inspections on a quarterly basis, with assistance from other available trained resources identified under the Measurable Goal section. No illicit discharges were identified during this reporting period. | | | | Yes |

| BMP & Responsible Party | Outfalls | Year | Measurable Goal | Completed (Yes or No) | # of Outfalls Screened | # of Dry-Weather Flows Identified | # Of Illicit Discharges: Identified* | # Of Illicit Discharges: Eliminated | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|---|---|
| Dry-Weather Screening of Outfalls | **# of Outfalls Screened - 8 Total # of Outfalls - to be determined** | 2010-2011 | Identify and inspect all storm water outfalls during dry-weather, on at least an annual basis | No | 8 outfalls screened | Outfalls screened during one Dry-Weather Flow | None. | N/A | No |
| | **# of Outfalls Screened - 10 Total # of Outfalls - to be determined** | 2011-2012 | | | 10 outfalls screened | | | | |
| | | 2012-2013 | | | 10 to 20 outfalls screened | | | | |
| Screen Storm Water Outfalls during Dry-Weather conditions for potential illicit discharges. Mayor, Police Officers and City Inspector | **# of Outfalls Screened - 20 Total # of Outfalls - 20 to 31** | 2013-2014 | Identify and inspect all storm water outfalls during dry-weather, on at least annually | Yes | 20 outfalls screened | | | | Yes |
| | | 2014-2015 | | | | | | | |
| | | 2015-2016 | | | | | | | |
| | **# of Outfalls Screened - 15 Total # of Outfalls - 20 to 31** | 2016-2017 | | | 15 outfalls screened | Outfalls screened during one Dry-Weather Flow. There were no flows observed during the dry weather observation periods. | | | |
| | **# of Outfalls Screened - 5 Total # of Outfalls - 6** | 2018-2019 | | | 5 outfalls screened Along with photos and dates inspected, records maintained in the City Code Enforcement Officer's office. | | | | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|
| Identification of allowable non-stormwater discharges | 2010-2011 | Identify and list all allowable non-storm water discharges in the Storm Water Ordinance | Yes | Compile a list of allowable non-storm water discharges in the new city ordinance. The list was compiled and included in the ordinance. We will continuously evaluate this list and make additions as necessary in the future. | Yes |
| | 2011-2012 | | | | |
| | 2012-2013 | | | | |
| | 2013-2014 | | | | |
| Identify all allowable non-stormwater discharges. Mayor and SWD Commission | 2014-2015 | | | | |
| | 2015-2016 | | | | |
| | 2016-2017 | | | | |
| | 2018-2019 | | | | |

# APPENDIX E

## Construction Site Runoff Violation Documentation

## CONSTRUCTION SITE RUNOFF CONTROL

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Cite Local Code(s) Being Used (If available, web link for code(s)) | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|
| Ordinance or Other Regulatory Mechanism | 2010-2011 | Develop an ordinance that addresses Construction Site Run Off Control, and references the dependence of Brookland on the State of Arkansas General Permit of Discharge of Storm Water from Construction Sites. | Yes | City of Brookland Ordinance #2009-1 and the State of Arkansas (ADEQ) General Permit for Discharge of Storm Water from Construction Sites. | City of Brookland Ordinance #2009-1 has been passed and is in the process of being fully implemented. This ordinance includes provisions for pre-construction site diagram and Storm Water Pollution Prevention Plan (SWPPP) review, as well as enforcement protocol. | Yes |
| | 2011-2012 | | | | City of Brookland Ordinance #2009-1 has been passed and implemented. This ordinance includes provisions for pre-construction site diagram and Storm Water Pollution Prevention Plan (SWPPP) review, as well as enforcement protocol. | |
| | 2012-2013 | | | | | |
| | 2013-2014 | | | | | |
| | 2014-2015 | | | | | |
| | 2015-2016 | | | | | |
| Develop an ordinance to address Construction Site Runoff control. Mayor and SWD Commission | 2016-2017 | | | | City of Brookland Ordinance #2009-1 has been passed and implemented. This ordinance includes provisions for pre-construction site diagram and Storm Water Pollution Prevention Plan (SWPPP) review, as well as enforcement protocol. Site drainage plans are now reviewed by Civil Engineering (out of Jonesboro) | |
| | 2018-2019 | | | | City of Brookland Ordinance #2009-1 has been passed and implemented. This ordinance includes provisions for pre-construction site diagram and Storm Water Pollution Prevention Plan (SWPPP) review, as well as enforcement protocol. All Site drainage plans are now reviewed by Civil Engineering Associates, LLC (out of Jonesboro) | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Standards Being Used | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|
| Sediment and Erosion Control Requirements | 2010-2011 | Include language in the Storm Water Ordinance addressing Sediment and Erosion Control at Constructions sites governed by the State of Arkansas General Permit for Discharge of Storm Water from Construction Sites. | Yes | Expectations and recommended BMP's necessary for Sediment and Erosion Control are included in Ordinance #2009-1. In addition, Pre-construction site diagram and SWPPP review will focus on Sediment and Erosion Control measures. Future site inspections will reinforce these provisions | There have not been any site development projects during this reporting period which have triggered site diagram/SWPPP review, so this portion of the ordinance has not been tested to this point. | Yes |
| | 2011-2012 | | | Expectations and recommended BMP's necessary for Sediment and Erosion Control are included in Ordinance #2009-1. In addition, Pre-construction site diagram and SWPPP review will focus on Sediment and Erosion Control measures. Site inspections will reinforce these provisions. | The Storm Water Commission has reviewed plans for the Whitten Creek Apartment complex (HJH Development). Construction has just started on these apartments (May 20121). The S.W. Commission has also reviewed plans for new Field House and concession stand project at the High School. The Brookland High School project will have a retention pond, and other pollution prevention measures. The S.W. Commission has also reviewed plans for the Stephen Southard Apartment complex on South Oak Street. Some construction is on-going at this location, with no storm water problems. | |
| | 2012-2013 | | | | Construction on the Whitten Creek Apartment Complex continued during 2012 and 2013. No other sites triggering review by the City of Brookland Storm Water Discharge Commission were initiated during this reporting period. | |
| | 2013-2014 | | | | Construction on the Whitten Creek Apartment Complex was completed during this reporting period. Other future proposed sites that may trigger review by the City of Brookland Storm Water Discharge Commission were identified during this reporting period. Those sites are: School Ridge Crossing PUD, Bearcat Crossing PUD, Sharp's Small Engines (new commercial building), and Brookland Hills Subdivision. As planning continues for each of these sites, the Storm Water Discharge Commission will review site drainage/erosion control maps as appropriate. | |
| | 2014-2015 | | | | Construction sites that triggered review by the City of Brookland Storm Water Discharge Commission were identified during this reporting period. Those sites are: Allred Subdivision - Cardinal St., Thompson Subdivision - Thurmand & Shirley Street, Phase I - Brookland Hills Subdivision, and "Look What I Can Do" Learning Center. | |
| | 2015-2016 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ensure that Sediment and Erosion Control Provisions are included in the Storm Water Ordinance<br>Mayor and SWD Commission | 2016-2017 | | | | | Construction sites that triggered review by the City of Brookland Storm Water Discharge Commission were identified during this reporting period. Those sites are: Brookland School - 1,200 seat Arena (gymnasium), Brookvale Subdivision, and Planned Unit Development (PUD) on Missouri Street. | |
| | 2018-2019 | | | | | Construction sites that triggered review of erosion control measures were identified during this reporting period. As stated, Civil Engineering Associates, LLC reviews all plans, with recommendations to the Storm Water Discharge Commission. In addition, the City of Brookland continued use of their Erosion Control Compliance Certification Sheet, which is now included in permit packages for Large Scale Developments. Sites triggering review for this reporting period are: Brookland Hills Subdivision, Phase 2, Brookland Hills Subdivision, Phase 3, Grey Stone, Brookvale Subdivision, Bearcat Mini Storage, NEA Mini Storage Cameron Place, Heritage Trace, NEA Medical Clinic | |
| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Complaints | | Summary of Results or Activities | Effective (Yes or No) |
| | | | | Received | Followed-Up On | | |
| Complaint Process Ensure that potential impacted parties have recourse to file complaints regarding construction site run off issues. Mayor and SWD Commission | 2010-2011 | Establish procedures for the filing an review of complaints relevant to storm water run off at construction sites. Include this language in the Storm Water Ordinance. | Yes | None during this reporting period | N/A | There have not been any site developments that triggered any complaints during this reporting period. | Yes |
| | 2011-2012 | | | | | There have been no storm water related complaints filed, in association with the construction sites outlined above. On-going construction at these locations will be monitored to ensure compliance with the Storm Water Discharge Ordinance | |
| | 2012-2013 | | | | | | |
| | 2013-2014 | | | | | There have been no storm water related complaints filed, in association with completion of the Whitten Creek Apartment Complex. Construction at this site was completed, and Certificates of Occupancy were issued during October/November, 2013. | |
| | 2014-2015 | | | | | There have been no storm water related complaints field, in association with any of the construction sites referenced above. | |
| | 2015-2016 | | | | | | |
| | 2016-2017 | | | 0 | 0 | There were no complaints filed at any construction sites during this reporting period. However, the City of Brookland is working with property owners to address 7 complaints of flash flooding during periods of heavy rain. Property owners will need to sign ROW agreements. | |
| | 2018-2019 | | | 1 | 1 | Grey Stone Addition had a complaint about mud being tracked onto the street, and muddy water leaving the construction site. A solid Rock check was installed down-stream to create a storm water detention pond, rip-rap rock checks were installed up-stream to reduce the storm water run-off velocity. All development sites under construction had some minor storm water control issues. Most of these issues were handled with a phone call to the develop about silt fencing or mud in the streets. The developers were responsive in resolving these issues quickly. | |
| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | # of Applicable Sites Requiring Plans | # of Plans Reviewed | Summary of Results or Activities | Effective (Yes or No) |
| Site Plan Review Procedures | 2010-2011 | | | None during this reporting period | None during this reporting period | There have not been any planned site developments which triggered applicability under the State of Arkansas General Permit for Discharge of Storm Water from Construction Sites. | |
| | 2011-2012 | | | 3 | 3 | As referenced above, the Storm Water Commission has reviewed plans for the 3 qualifying construction sites: 1) Whitten Creek Apartments, 2) High School Field house, and 3) Stephen Southard Apartment Complex | |
| | 2012-2013 | | | There were no new sites that triggered Site Plan Review during this reporting period | N/A | As referenced in last year's report, the Storm Water Commission did review plans for 3 qualifying construction sites during the 2011/2012 reporting period. However, there were no new sites triggering Site Plan Review during the 2012 - 2013 reporting period. | |
| | 2013-2014 | | | | | As reference in a previous section, there are four (4) planned development sites that may trigger review by the Storm Water Commission. As planning continues for these sites, the Commission will review site drainage/erosion control maps accordingly. Non of these sites triggered this review during the current reporting period. | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ensure that Site Plan Review Procedures are in place for any construction site triggering applicability under the State of Arkansas General Permit for Discharge of Storm Water from Construction Sites. Mayor and SWD Commission. | 2014-2015 | Include language in the Storm Water Ordinance addressing Site Plane Review Procedures for any construction site triggering applicability under the State of Arkansas General Permit for Discharge of Storm Water from Construction Sites. | Yes | [redacted] | 4 | As referenced above, there were 4 construction sites that triggered review by the Storm Water Commission during this reporting period. Th commission reviewed site drainage/erosion control maps accordingly. The Storm Water Commission, City Police, and City Inspector will continue to monitor progress at each of these sites throughout the entire construction process | [redacted] | Yes |
| | 2015-2016 | | | | | | | |
| | 2016-2017 | | | 3 | 3 | There were 3 construction sites (listed in a previous section of this report) that triggered review by the Storm Water Commission during this reporting period. The Commission (and Civil Engineering - Jonesboro) reviewed site drainage/erosion control maps accordingly. The Storm Water Commission, City Police, and City Inspector will continue to monitor progress at each of these sites throughout the entire construction process | | |
| | 2018-2019 | | | 1 | 1 | There was 1 construction site (Grey Stone) that triggered Site Plan review by the Storm Water Commission during this reporting period. As stated previously, Civil Engineering Associates, LLC - Jonesboro reviewed site drainage/erosion control maps accordingly, with recommendations to the Storm Water Discharge Commission. The Storm Water Discharge Commission, and specifically the Code Enforcement Officer trained in Storm Water Permit Inspections, will continue to monitor progress at each of these sites throughout the entire construction process. The City of Brookland also continued implementation of a very important provision for anyone applying for a Building Permit. All applicants must have a "Dig Permit", which requires applicants to: 1) have a building footing laid out for inspection of set-backs, and; 2) Have all Storm Water BMP's in place to prevent storm water run-off, at the time of the "Dig Permit" Inspections. This change was a result of the August, 2017 ADEQ MS4 Inspection. | | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Site Inspections Performed | | | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|---|
| | | | | # of Applicable Sites | # Performed | Avg. Frequency | | |
| Site Inspection Procedures | 2010-2011 | Establish Site Inspection Procedures, including those responsible for conducting the inspections, and site inspection frequency for all applicable development sites. | No | None during this reporting period | None | N/a | Will develop these procedures and include them in the Storm Water Management Program, including applicable inspection check lists. | No |
| | 2011-2012 | | | 1 | 2 | Once/quarter | Will continue to develop these procedures and include them in the Storm Water Management Program, including applicable inspection check lists. There will be two new applicable sites for 2012 (Whitten Creek Apartments and the High School Field House Project) | |
| | 2012-2013 | | | 2 | 8 | | Will continue to develop these procedures and include them in the Storm Water Management Program, including applicable inspection check lists. The Whitten Creek Apartment site, and the High School Field House Project were both inspected periodically during this reporting period. There were no instances of any violations of the Storm Water Discharge Ordinance, and no significant issues identified at either location. | |
| | 2013-2014 | | | 1 | 4 | | Will continue to develop these procedures and include them in the Storm Water Management Program, including applicable inspection check lists. The Whitten Creek Apartment site was inspected periodically during this reporting period. There were no instances of any violations of the Storm Water Discharge Ordinance, and no significant issues identified at this construction location. As referenced the Whitten Creek Apartment Complex has now completed construction, so no further inspections are planned for this site. | |
| Ensure that Site Inspection Procedures are in place to monitor compliance with Ordinance #2009-1 and the Arkansas General Permit for Discharge of Storm Water from Construction Sites. | 2014-2015 | | Yes | 4 | 4 | | Each of the active construction sites were inspected periodically during this reporting period. There were no instances of any violations of the Storm Water Discharge Ordinance, and no significant issues identified at any of the construction locations. | Yes |
| | 2015-2016 | | | | | | Each of the active construction sites were inspected periodically during this reporting period. There were no instances of any violations of the Storm Water Discharge Ordinance, and no significant issues identified at any of the construction locations. | |
| | 2016-2017 | | | 3 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mayor and SWD Commission | 2018-2019 | | | 9 | 108 | Once/month | There were 9 Active construction sites that triggered inspections during this reporting period. Those sites are: Brookland Hills Subdivision, Phase 2, Brookland Hills Subdivision, Phase 3, Grey Stone, Brookvale Subdivision, Bearcat Mini Storage, NEA Mini Storage Cameron Place, Heritage Trace, and NEA Medical Clinic. Results from inspections are documented, and retained in files at the City Hall (Code Enforcement Officer's Office). Based on these monthly inspections, there were no significant instances of violations of the Storm Water Discharge Ordinance. Instances of improper application of BMP's have been addressed with the developers via written documentation (letter or text), rather than phone calls | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Violations | | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|
| | | | | # of Violation Letters | # of Enforcement Actions | | |
| Enforcement Procedures | 2010-2011 | Include specific enforcement language in Ordinance #2009-1 to address violations of the ordinance. | Yes | None No development sites triggered applicability during this | None | There have not been any planned site developments which triggered applicability under the State of Arkansas General Permit for Discharge of Storm Water from Construction Sites. | Yes |
| | 2011-2012 | | | None | | The only site triggering potential enforcement actions during this reporting period were the Stephan Southard Apartments. There have been absolutely no storm water related problems at this construction site during the reporting period | |
| | 2012-2013 | | | | | Both the Whitten Creek Apartment site, and the new High school Field House projects were monitored during this period, and neither of these projects triggered any need for Violation Letters and/or enforcement. | |
| | 2013-2014 | | | | | The Whitten Creek Apartment site was monitored during this reporting period, and this project did not trigger any need for Violation Letters and/or enforcement. | |
| Ensure that Enforcement Procedures are included in the Storm Wate | 2014-2015 | | | | | Each of the previously referenced construction sites was monitored during this reporting period, and none of these projects triggered any need for Violation Letters and/or enforcement. | |
| | 2015-2016 | | | | | | |
| | 2016-2017 | | | | | Each of the previously referenced construction sites was monitored during this reporting period, and none of these projects triggered any need for Violation Letters and/or enforcement. The City did do a "Stop Work" declaration for a Mini Storage facility being constructed on Highway 49, until the owners secured a Storm Water Discharge Permit for Construction Activities. This construction site will carry over into 2017, and will be monitored during the next Reporting Period | |
| | 2018-2019 | | | | | Each of the previously referenced construction sites was monitored during this reporting period, and none of these projects triggered any need for Violation Letters and/or enforcement by the City of Brookland. As noted in the previous section, Mr. Shawn Dacus (Code Enforcement Officer) has started providing initial contact with developers in the form of written letters or texts, rather than phone calls. This provides written documentation of the initial contact regarding SWMP issues, and has really seemed to help to reduce the challenges associated with SWMP compliance. | |

# APPENDIX F

## Post-Construction Site Runoff Violation Documentation

## POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

| BMP & Responsible Party | Year | Measurable Goal | Compl (Yes or N) | Cite Local Code(s) Being Used (If available, web link for code(s)) | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|
| Ordinance or Other Regulatory Mechanism<br>Develop an ordinance to address Post-Construction Storm water management.<br>Mayor and SWD Commission | 2010-2011 | Develop an ordinance that includes language that effectively addresses Post-Construction storm water management in new development and redevelopment areas. | Yes | City of Brookland Ordinance #2009-1 (included in the SWMP) | City of Brookland Ordinance #2009-1 has been passed and is in the process of being fully implemented. This ordinance includes provisions for post-construction storm water management. | Yes |
| | 2011-2012 | | | | City of Brookland Ordinance #2009-1 has been passed and the process of full implementation continues. This ordinance includes provisions for post-construction storm water management. | |
| | 2012-2013 | | | | | |
| | 2013-2014 | | | | | |
| | 2014-2015 | | | | | |
| | 2015-2016 | | | | | |
| | 2016-2017 | | | | | |
| | 2018-2019 | | | | | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Structural and/or Non-Structural Standards Being Used | Summary of Results or Activities/Compliance rates with MS4 requirements | Effective (Yes or No) |
|---|---|---|---|---|---|---|
| Post-Construction Requirements<br>Ensure that Post-Construction Storm Water Management requirements are defined in the Storm Water Management Ordinance.<br>Mayor and SWD Commission | 2010-2011 | Include language in the Storm Water Ordinance which clearly defines responsibilities and methods for controlling post-construction storm water run-off. | Yes | We need to improve this section of our Storm Water Ordinance, to include more specific guidance on structural BMP's for Post-Construction Storm Water run-off control. | There have not been any significant land developments, or re-developments over this reporting period, which would have triggered Post-Construction storm water management practices. | No |
| | 2011-2012 | | | | None of the construction sites triggering applicability during this reporting period have reached the Post-Construction phase yet. We will continue to monitor each site during the coming year, and work with the developers to ensure there are no Post-Construction storm water problems. | |
| | 2012-2013 | | | | The Whitten Creek Apartment site did complete Phase I of this project during this reporting period, and the civil engineers in charge of this project have done a good job to ensure proper management of post-construction storm water runoff. Silt fences have been properly installed and retention ponds were constructed to architect design Vegetative ground cover was planted before winter, and straw was sprayed on the sides of the retention ponds. | |
| | 2013-2014 | | | | The Whitten Creek Apartment site was completed during this reporting period, and the civil engineers in charge of this project have done a good job to ensure proper management of post-construction storm water runoff. Retention ponds were constructed to architect design. Landscaping and sod installation is complete. | Yes |
| | 2014-2015 | | | | Phase I Infrastructure for the Brookland Hills Subdivision, and the "Look What I Can Do" Learning Center were completed during this reporting period. Effective Post-Construction Storm Water run-off measures have been implemented at both locations. On-going inspections of both sites will confirm the effectiveness of these measures. | |
| | 2015-2016 | | | | | |
| | 2016-2017 | | | | Brookland Hills Subdivision - Phase 2 was completed during this reporting period. Effective Post-Construction Storm Water run-off measures have been implemented at this location. On-going inspections of this site will confirm the effectiveness of these measures. | |
| | 2018-2019 | | | The City of Brookland continues to work to improve this section of our Storm Water Ordinance and Storm Water Management Plan, to include more specific guidance on structural BMP's for Post-Construction Storm Water run-off control. | All of the aforementioned active development sites met the Post-Construction storm water run-off control requirements during this reporting period. | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | # of Applicable Sites Requiring Post-Const. BMPs | # of Plans Reviewed | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|
| Site Plan Review Procedures | 2010-2011 | | | There were no significant land development/redevelopment projects planned or implemented during this reporting period | None | We need to draft Post-Construction storm water management control guidance for Ordinance #2009-1 | No |
| | 2011-2012 | | | There were no triggering construction projects which reached the Post-Construction phase during this reporting period. | | We need to draft Post-Construction storm water management control guidance for Ordinance #2009-1. We will work the developers currently working on the three triggering construction sites, to ensure that effective Post-Construction storm water pollution prevention measures are implemented. | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2012-2013 | Include language in the Storm Water Ordinance which effectively addresses Site Plan Review procedures, to ensure the review includes Post-Construction Run-Off control measures at all State General Permit sites. | No | 1 - Whitten Creek Apartments | 1 - Whitten Creek Apartments (reviewed with Civil Engineers in charge of the project) | We need to draft Post-Construction storm water management control guidance for Ordinance #2009-1. We worked with the developers and civil engineers in charge of the project, to ensure that effective Post-Construction storm water pollution prevention measures were implemented. Measures are outlined in above section. | |
| | 2013-2014 | | | | | | |
| Ensure that Site Plan Review Procedures are in place for Post-Construction storm water control at site triggering applicability under the State of Arkansas General Permit for Discharge of Storm Water from Construction Sites.<br>Mayor and SWD Commission. | 2014-2015 | | | 2 | 2 | We need to draft Post-Construction storm water management control guidance for Ordinance #2009-1. The City of Brookland worked with the developers and civil engineers in charge of the two construction sites referenced above, in order to identify appropriate Post-Construction Storm Water run-off measures. | Yes |
| | 2015-2016 | | | | | | |
| | 2016-2017 | | | 1 | 1 | We need to draft Post-Construction storm water management control guidance for Ordinance #2009-1. The City of Brookland worked with the developers and civil engineers in charge of the construction of Brookland Hills Subdivision - Phase 2, in order to identify appropriate Post-Construction Storm Water run-off measures. | |
| | 2018-2019 | | | | | The City of Brookland still needs to draft Post-Construction storm water management control guidance for Ordinance #2009-1. The City of Brookland has worked with the developers and civil engineers in charge of the construction of Bearcat Mini Storage, to define Post-Construction run-off control measures. Grass and stabilization of erosion are in place, however; this site has not been released by ADEQ as of the date of this report. | No |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Site Inspections Performed | | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|
| | | | | # Performed | Avg. Frequency | | |
| Site Inspection Procedures | 2010-2011 | Establish Site Inspection Procedures, including those responsible for conducting the inspections, and site inspection frequency for all applicable Post-Construction and re-development sites | No | There were no significant land development/redevelopment projects planned or implemented during this reporting period | N/A | We need to draft Post-Construction inspection procedures for storm water management control to be included in Ordinance #2009-1. | No |
| | 2011-2012 | | | | | | |
| | 2012-2013 | | | One inspection performed at the Whitten Creek Apartment site. This site just recently triggered Phase I Post-Construction status. | Planned for once per quarter. Site just recently trigger Phase I Post-Construction status. | | Yes |
| | 2013-2014 | | | | Planned for once per year. Site construction is complete, landscaping is installed, and drainage conveyances are maintained in good condition. | | |
| Ensure that Site Inspection Procedures are in place to monitor Post-Construction storm water run-off quality at all State General Permit construction, and redevelopment sites.<br>Mayor and SWD Commission | 2014-2015 | | | 2 - Phase I Brookland Hills Subdivision, and "Look What I Can Do" Learning Center | Planned for once per year after site construction is complete, landscaping and drainage conveyances are installed. To ensure that all Post-Construction storm water run-off practices are maintained in good shape. | We need to draft more formal Post-Construction inspection procedures for storm water management control to be included in Ordinance #2009-1. | |
| | 2015-2016 | | | | | | |
| | 2016-2017 | | | 1 - Brookland Hills Subdivision, Phase 2 | | | |
| | 2018-2019 | | | 1 | Frequency of Post-Construction Run-Off Control Inspections will be based on recommendations from Civil Engineering Associates, LLC (Jonesboro) | Formal Post-Construction inspection procedures for storm water management control still need to be developed and included in Ordinance #2009-1. Shawn Dacus (Code Enforcement Officer) did inspect the post-closure provisions of the Bearcat Mini Storage development, and took photos. However there is currently no documents checklist type of Post-Closure Inspection | No |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | Violations | | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|
| | | | | # of Violation Letters | # of Enforcement Actions | | |
| | 2010-2011 | | | | | There were no significant land development/redevelopment projects planned or implemented during this reporting period which might have triggered inspections and possible violations | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Enforcement Procedures | 2011-2012 | Include specific enforcement language in Ordinance #2009-1 to address violations of the ordinance. | Yes | None | None | There were no significant construction projects which reached the Post-Construction phase during this reporting period | Yes |
| | 2012-2013 | | | | | Phase I Post-Construction storm water activities at the Whitten Creek Apartment site are progressing in good shape. No need for violation letters and/or enforcement. | |
| | 2013-2014 | | | | | Post-Construction storm water activities at the Whitten Creek Apartment site are complete. No need for violation letters and/or enforcement. | |
| Ensure that Enforcement Procedures are included in the Storm Water Ordinance to support compliance with Ordinance #2009-1 and the Arkansas General Permit for Discharge of Storm Water from Construction Sites. Mayor and SWD Commission | 2014-2015 | | | | | Post-Construction storm water activities at the two referenced sites are complete. No need for violation letters and/or enforcement. | |
| | 2015-2016 | | | | | | |
| | 2016-2017 | | | | | Post-Construction storm water activities at the referenced site is complete. No need for violation letters and/or enforcement. | |
| | 2018-2019 | | | | | Bearcat Mini Storage has reached the Post-Construction run-off control status for that development. As referenced above, the Code Enforcement Officer has conducted a Post-Construction site inspection, with no violations noted. Mr. Dacus did take photos as part of his inspection. Formal Post-Construction documentation protocol needs to be developed. | |

| BMP & Responsible Party | Year | Measurable Goal | Completed (Yes or No) | # of Sites Requiring Plans/Agreements | # of Plans Developed/Agreements in Place | Summary of Results or Activities | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|
| Long-Term O&M Plans/Agreements | 2010-2011 | Address expectations and responsibilities for Post Construction O&M Plans and agreements, for managing storm water run-off, in the Storm Water Management Ordinance. | No | None | None | There were no significant land development/redevelopment projects planned or implemented during this reporting period which might have triggered long term O&M plans/agreements | No |
| | 2011-2012 | | | | | There were no significant construction projects which reached the Post-Construction phase during this reporting period | |
| | 2012-2013 | | | 1 - Whitten Creek Apartments | 1 - Whitten Creek Apartments (Phase I) | Reference information in previous entries for this section outlined above. | Yes |
| | 2013-2014 | | | | | Construction at the Whitten Creek Apartment Complex is complete. Letters of Occupancy were issued during October/November 2013. Owners of property are doing a good job of ensuring that post-construction storm water management issues are addressed effectively. | |
| Address Long-Term O&M plans and agreements for Post-Construction storm water control within the Storm Water Management Ordinance. Mayor and SWD Commission | 2014-2015 | | | 2 - Phase I Brookland Hills Subdivision, and "Look What I Can Do" Learning Center | 2 - Phase I Brookland Hills Subdivision and "Look What I Can Do" Learning Center | Effective Post-Construction Storm Water run-off measures have been implemented at both referenced sites. On-going inspections of both projects will confirm effectiveness of these measures. | |
| | 2015-2016 | | | | | | |
| | 2016-2017 | | | 1 - Brookland Hills Subdivision, Phase 2 | 1 - Brookland Hills Subdivision, Phase 2 | | |
| | 2018-2019 | | | 0 | 0 | As stated previously in this report, the City of Brookland will work with Civil Engineering Associates, LLC to develop effective Post-Construction Run-Off Control protocol, to include any review and approval of Long-Term O&M Plans/Agreements. Again, there are no sites in the City of Brookland that have triggered Post-Construction O&M Plan Status, as of this reporting period. | No |

# APPENDIX G

## Examples of Materials Used for Pollution Prevention/Good Housekeeping Training

United States Environmental Protection Agency
Office of Water (4203)
EPA 833-F-00-010
January 2000 (revised December 2005)
Fact Sheet 2.8

EPA

# Stormwater Phase II Final Rule

## Pollution Prevention/Good Housekeeping Minimum Control Measure



This fact sheet profiles the Pollution Prevention/Good Housekeeping for Municipal Operations minimum control measure, one of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

### Why Is Pollution Prevention/Good Housekeeping Necessary?

The Pollution Prevention/Good Housekeeping for municipal operations minimum control measure is a key element of the small MS4 stormwater management program. This measure requires the small MS4 operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 operator, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

### What Is Required?

Recognizing the benefits of pollution prevention practices, the rule requires an operator of a regulated small MS4 to:

- ❑ Develop and implement an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations into the storm sewer system;
- ❑ Include employee training on how to incorporate pollution prevention/good housekeeping techniques into municipal operations such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. To minimize duplication of effort and conserve resources, the MS4 operator can use training materials that are available from EPA, their State or Tribe, or relevant organizations;
- ❑ Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Some program implementation approaches, BMPs (i.e., the program actions/activities), and measurable goals are suggested below.

## What Are Some Guidelines for Developing and Implementing This Measure?

The intent of this control measure is to ensure that existing municipal, State or Federal operations are performed in ways that will minimize contamination of stormwater discharges. EPA encourages the small MS4 operator to consider the following components when developing their program for this measure:

- ***Maintenance activities, maintenance schedules, and long-term inspection procedures*** for structural and non-structural controls to reduce floatables and other pollutants discharged from the separate storm sewers;
- ***Controls for reducing or eliminating the discharge of pollutants*** from areas such as roads and parking lots, maintenance and storage yards (including salt/sand storage and snow disposal areas), and waste transfer stations. These controls could include programs that promote recycling (to reduce litter), minimize pesticide use, and ensure the proper disposal of animal waste;
- ***Procedures for the proper disposal of waste*** removed from separate storm sewer systems and areas listed in the bullet above, including dredge spoil, accumulated sediments, floatables, and other debris; and
- ***Ways to ensure that new flood management projects assess the impacts on water quality*** and examine existing projects for incorporation of additional water quality protection devices or practices. EPA encourages coordination with flood control managers for the purpose of identifying and addressing environmental impacts from such projects.

The effective performance of this control measure hinges on the proper maintenance of the BMPs used, particularly for the first two bullets above. For example, structural controls, such as grates on outfalls to capture floatables, typically need regular cleaning, while non-structural controls, such as training materials and recycling programs, need periodic updating.

## What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are meant to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should consider the needs and characteristics of the operator and the area served by its small MS4. The measurable goals should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 program goal might be to incorporate the use of road salt alternatives for highway deicing and reduce traditional road salt use by 50 percent in the first year of the permit term.

### For Additional Information

***Contacts***

☞ U.S. EPA Office of Wastewater Management
http://www.epa.gov/npdes/stormwater
Phone: 202-564-9545

☞ Your NPDES Permitting Authority. Most States and Territories are authorized to administer the NPDES Program, except the following, for which EPA is the permitting authority:

| | |
|---|---|
| Alaska | Guam |
| District of Columbia | Johnston Atoll |
| Idaho | Midway and Wake Islands |
| Massachusetts | Northern Mariana Islands |
| New Hampshire | Puerto Rico |
| New Mexico | Trust Territories |
| American Samoa | |

☞ A list of names and telephone numbers for each EPA Region and State is located at http://www.epa.gov/npdes/stormwater (click on "Contacts").

***Reference Documents***

☞ EPA's Stormwater Web Site
http://www.epa.gov/npdes/stormwater
- Stormwater Phase II Final Rule Fact Sheet Series
- Stormwater Phase II Final Rule (64 *FR* 68722)
- National Menu of Best Management Practices for Stormwater Phase II
- Measurable Goals Guidance for Phase II Small MS4s
- Stormwater Case Studies
- And many others

## POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

| Year | BMP & Responsible Party | Measurable Goal | Completed (Yes or No) | Topic | Targeted Audience | # of Employees Attended | Summary of Activity | Effective (Yes or No) |
|---|---|---|---|---|---|---|---|---|
| 2010-2011 | Employee Training Program | Ensure that all city employees are trained at least annually, with regards to proper methods for handling wastes associated with routine maintenance, as well as generally accepted good housekeeping practices. | Yes | How to manage used oil, transmission fluid, antifreeze. Organization of tools, storage of fluids, and good maintenance procedures. | All City Employees (Police and Wastewater) | 12 Employees | Training conducted using materials contained in our Storm Water Management Program | Yes |
| 2011-2012 | | | | | | | | |
| 2012-2013 | | | | | | | | |
| 2013-2014 | | | | | | | Annual refresher raining conducted using materials contained in our Storm Water Management Program. | |
| 2014-2015 | | | | | | | | |
| 2015-2016 | | | | | | | | |
| 2016-2017 | | | | | | | | |
| 2018-2019 | Implement an Employee Training Program to promote effective Pollution Prevention and good housekeeping relevant to Municipal Operations. Mayor and SWC Commission | | | | | 16 Employees | Annual refresher raining conducted using materials contained in our Storm Water Management Program. All Department Heads, and Workers recently received verbal instructions on new storm water BMP's. Monthly Employee Safety Meetings and general Department Head meetings are held each month. Storm Water Permit compliance is addressed in these meetings. Videos were used to refresh knowledge and answer questions. | |

| Year | List of Municipal Facilities Subject to Program | O&M Procedures Developed for Facilities (Yes or No) | # of Facility Inspections Performed | Frequencies of Such Inspections |
|---|---|---|---|---|
| 2010-2011 | | | | |
| 2011-2012 | | | | |
| 2012-2013 | City of Brookland Police Department | Yes | None at this point. Will implement in the future. | N/A |
| 2013-2014 | Municipal Wastewater Treatment Facility | | | |
| 2014-2015 | Volunteer Fire Department | | | |
| 2015-2016 | | | | |
| 2016-2017 | | | | |
| 2018-2019 | City of Brookland Police Department<br>Municipal Wastewater Treatment Facility<br>Volunteer Fire Department<br>Department Shop and Grounds | Yes - Developed and implemented new BMP's to reduce pollutant run-off from Municipal Operations effective January 1, 2018 | 2 documented Inspections - at the City Shop locations (one on 1-4-2018, and one on 4-11-2018) Monthly visual inspections conducted by Dept. Heads, but no documentation. | MONTHLY |

| Year | | Summarize Maintenance Activities and Schedules | Summarize Activities Performed |
|---|---|---|---|
| 2010-2011 | | | Change oil, transmission fluid and antifreeze in city vehicles. Perform routine maintenance on wastewater treatment system pumps and other operational equipment. |
| 2011-2012 | | | |
| 2012-2013 | | | Change oil, transmission fluid and antifreeze in city vehicles. Perform routine maintenance on wastewater treatment system pumps and other operational equipment. In addition, during this reporting period, we eliminated the practice of storing diesel fuel at the City Shop location. We now simply purchase diesel at the local convenience store. |
| 2013-2014 | | | |
| 2014-2015 | | | |
| 2015-2016 | MS4 Maintenance | Routine Fire and Police Vehicle Maintenance. Collection system and operations maintenance for municipal wastewater treatment system. | Change oil, transmission fluid and antifreeze in city vehicles. Perform routine maintenance on wastewater treatment system pumps and other operational equipment. |
| 2016-2017 | | | |

| | | | |
|---|---|---|---|
| 2018-2019 | | Maintenance performed as needed per routine schedules. | Change oil, transmission fluid and antifreeze in city vehicles. Perform routine maintenance on wastewater treatment system pumps and other operational equipment. *The City of Brookland has installed a new concrete pad with an effective filtration system, for all municipal vehicle maintenance activities. This action was completed in response to the August, 2017 ADEQ inspection. In addition, the new Code Enforcement Officer as completed Storm Water Inspection Training (Hot Springs - 3-21-2018), as defined in previous sections of this report. Brookland has also implemented BMP's for chemical handling/storage, as well as raw material (steel, etc.) storage, at all Municipal buildings; to prevent potential pollutant run-off from operations at those locations. |

| Year | | Procedures Developed (Yes or No) | Document Amounts of Wastes Properly Disposed |
|---|---|---|---|
| 2010-2011 | Disposal of Wastes | Yes. Curbside Pickup for Wastes and Recyclable Materials by Dedman's Sanitation Disposal handled at Legacy Landfill in Craighead County | Approximately 15 Tons per week of normal domestic trash and refuse. |
| 2011-2012 | | | |
| 2012-2013 | | | |
| 2013-2014 | | | |
| 2014-2015 | | | Approximately 18 to 20 Tons per week of normal domestic trash and refuse. |
| 2015-2016 | | | |
| 2016-2017 | | | |
| 2018-2019 | | | |

| Year | | Covered (Yes or No) | Tons Used | Summarize Measures Taken to Minimize Usage |
|---|---|---|---|---|
| 2010-2011 | Road Salt | No | N/A | N/A |
| 2011-2012 | | | | |
| 2012-2013 | | | | |
| 2013-2014 | | | | |
| 2014-2015 | | | | |
| 2015-2016 | | | | |
| 2016-2017 | | Yes | 0.15 tons (300 lbs) | Was combined with sand and was only spread at intersections and hills during ice and snow events. |
| 2018-2019 | | No | None Used | 5 yards of clean sand was spread at intersections and hills during ice and snow events. |

| Year | | Procedures Developed (Yes or No) | Gallons Used | Summarize Measures Taken to Minimize Usage |
|---|---|---|---|---|
| 2010-2011 | Pesticide & Herbicide Usage | No | N/A | N/A |
| 2011-2012 | | | | |
| 2012-2013 | | | | |
| 2013-2014 | | | | |
| 2014-2015 | | | | |
| 2015-2016 | | | | |
| 2016-2017 | | Yes | 60 Gallons Herbicide | WF Corner Stone Plus Herbicide was used to spray ditches and fence lines. Vector Disease Control was contracted for mosquito control. |
| 2018-2019 | | Yes | 17.5 Gallons Herbicide | WF Corner Stone Plus Herbicide (15 Gallons) and Charger (2.5 Gallons) was used to spray ditches and fence lines. Vector Disease Control was contracted for mosquito control. |

| Year | | Procedures Developed (Yes or No) | Pounds Used | Summarize Measures Taken to Minimize Usage |
|---|---|---|---|---|
| 2010-2011 | Fertilizer Usage | No | N/A | N/A |
| 2011-2012 | | | | |
| 2012-2013 | | | | |
| 2013-2014 | | | | |
| 2014-2015 | | | | |
| 2015-2016 | | | | |
| 2016-2017 | | | | |
| 2018-2019 | | | | |

| Year | | Procedures Developed (Yes or No) | Document Amount of Material Collected and Properly Disposed |
|---|---|---|---|
| 2010-2011 | Street Sweeping | No | N/A |
| 2011-2012 | | | |
| 2012-2013 | | | |
| 2013-2014 | | | |
| 2014-2015 | | | |

| | | | |
|---|---|---|---|
| 2015-2016 | | | |
| 2016-2017 | [redacted] | | [redacted] [redacted] |
| 2018-2019 | | | |
| Year | | Summarize any New or Existing Flood Management Projects that were Assessed for Impacts on Water Quality | |
| 2010-2011 | Flood Management Projects | None were assessed for impacts on water quality. However the following actions ere taken during this reporting period: Replaced 18 inch culvert on Cherri Street with a 24 inch tile. Replaced a culvert at the intersection of Bernis and Stevens with a 36 inch oval. Spent 1,614 hours of city employee time weed eating and cleaning all ditches of debris. | |
| 2011-2012 | | | |
| 2012-2013 | | None were assessed for impacts on water quality. However the following actions were taken during this reporting period: As referenced in previous sections of this report, we had a total of 120 volunteer hours spent in cleaning debris from roadside drainage ditches. In addition, the city spent approximately 1,600 hours of city employee time weed eating and cleaning all ditches of debris. Finally, the city partnered with 3 individual citizens to hire backhoe service to clean out approximately 2,100 feet of drainage ditch on the southeast edge of town, which empties into Maple Slough. | |
| 2013-2014 | | None were assessed for impacts on water quality. However the following actions were taken by the City of Brookland during this reporting period: 1) Road ditches for Hayes, Nelms, South Oak, South Bernis, East Hinkley, and Eason Streets, as well as the Whitten Creek road ditches, were all cleaned out. A total of 22,927 feet of ditches were cleaned. In addition, 16 drive way culverts were change out. 2) 6 Storm water weirs were placed in locations to slow storm water run-off. 4 were placed on West School Street, and 2 were placed on South Oak Street. 3) Drainage ditch running East off Eason Street was cleaned out. A total of 5,255 feet of ditch was cleaned. One 18" culvert was replaced with a 36" culvert. 4) Two 18" culverts with metal flaps were placed on the inlet side to Maple Slough ditch, in an effort to reduce/stop back-flow, which was causing Eason Street to be closed, and also resulting in flooding farm land inside the city. 5) A 36" galvanized culvert was replaced with a 48" elliptical concrete culvert at West School Street (West of the Highway 49 intersection). This new culvert tied into a concrete box, connecting two galvanized 36" culverts that run to Maple Slough Ditch. Approximately 400 feet of Maple Slough Ditch was cleaned and re-shaped. | |
| 2014-2015 | | None were assessed for impacts on water quality. However the following "Flood Management" actions were taken by the City of Brookland during this reporting period: 1) 17,524 feet (3.31 miles) of drainage ditches were cleaned out. 2) Two (2) weirs were installed to control storm water run-off on School Street. 3) 27 culverts were changed out. | |
| 2015-2016 | | | |
| 2016-2017 | | None were assessed for impacts on water quality (Not required for this permittee). However the following "Flood Management" actions were taken by the City of Brookland during this reporting period: 1) 5,635 ft. of drainage were cleaned out. 2) 9 culverts were replaced. 3) Added 2 new storm water retention ponds at school construction sites, 1 at the corner of East School and Holman, and a new 7 acre retention pond on the east side of Union Pacific Rail Road in the Brookland Hills Subdivision. Ditch cleanings resulted in the removal of much more trash and debris this year, due to high rain amount. | |
| 2018-2019 | | None were assessed for impacts on water quality (Not required for this permittee) | |

# POLLUTION PREVENTION/GOOD HOUSEKEEPING

# FOR MUNICIPAL OPERATIONS:

## A GUIDANCE DOCUMENT
## OF
## BEST MANAGEMENT PRACTICES
## AND
## INSPECTION CHECKLISTS

WNY
Stormwater
Coalition

**Erie County Department of Environment and Planning**
**Division of Environmental Compliance Services**

# POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS:

# A GUIDANCE DOCUMENT OF BEST MANAGEMENT PRACTICES

# AND INSPECTION CHECKLISTS

TABLE OF CONTENTS

## INTRODUCTION

This group of (17) Pollution Prevention/Good Housekeeping Best Management Practices and Inspection checklists that relate to municipal operations and their potential effects on stormwater have been developed and assembled by a group of municipal officials that have a wealth of experience pertaining to operations and maintenance within municipalities. The information that has been formulated as guidance material for implementation of the Stormwater Phase II Municipal Separate Storm Sewer System Permit **has not** been designed to be comprehensive in all aspects of each topic. Municipalities should be "flexible" in their use of this information as pertains to their own unique municipal operations.

## STORMWATER REFERENCE INFORMATION

**Many sources of information concerning stormwater are available. The sources listed below were used to develop the Guidance Document:**

New York State Dept. of Transportation – (http://www.dot.state.ny.us) - use the search function to locate the Environmental Handbook for Transportation Operations document and other related information

Cornell University - (http://www.cornell.edu) – the Dept. of Horticulture has information pertaining to pest control, landscaping and lawn care

U.S. Environmental Protection Agency - (http://www.epa.gov) – the National Menu of Best Management Practices (BMPs) for NPDES Storm Water Phase II document can be found at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm within the EPA website, along with other stormwater related information

Rick\StWtrOutlineInfo

## GLOSSARY OF TERMS

*Biochemical oxygen demand* – Depletion of dissolved oxygen in water caused by decomposition of chemical or biologic matter.

*Catch Basin* – A unit that is installed to capture and retain debris, particulate matter, or other solid materials, but allows stormwater to "flow through" to its discharge location

*Drip Irrigation* –irrigation via a perforated device (i.e. hose) that allows for a slow watering method with reduced evaporation and runoff losses

*Hydraulic* – Referring to water

*(IPM) Integrated Pesticide Management* – An environmentally sensitive approach to pest management (**not** elimination) that uses the least toxic control method – a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.

*Loading* – Term used in conjunction with *sediment* and *hydraulic* to describe excessive amounts (of the term that is described)

*Naturescaping* – An alternative landscaping technique that incorporates native plants and creates beneficial wildlife habitat – also conserves water and energy, reduces soil/water pollution.

*Oil/Water Separator* – A unit that is installed "in line" to a wastewater discharge pipe which is devised to capture petroleum derived materials that float on water

*Pesticides* – Products that are toxic and are used to kill pests - can be classified as insecticides, herbicides, rodenticides, biocides, aquacides.

*POTW* – Publicly Owned Treatment Works - - a municipal wastewater treatment plant

*Scupper* – an opening (in a bridge deck) to allow water drainage – it does not capture debris, particulate matter, or other solid materials

*Sediments* - Small particles of matter that settle to the bottom of a body of water

*Silt* – Material consisting of mineral soil particles ranging in diameter from 0.02 millimeters to 0.002 millimeters

*Stormwater* - rainwater runoff or snow melt waters – these waters can interact with different types of materials, transporting contaminants to surface waters (i.e. streams, creeks, rivers)

*Toxicity* –The relative degree of being poisonous

*Xeriscaping* – An alternative landscaping technique that incorporates slow growing plants to conserve water and reduce yard trimmings

*Zero input, low input (lawns)* - have minimal need for care (i.e. addition of fertilizers/pesticides, water, etc.)

# LANDSCAPING AND LAWN CARE
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Nutrient loading (nitrogen and phosphorous) from fertilizer runoff can cause excessive aquatic plant growth

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical Oxygen Demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Purchase only enough lawn care products necessary for one year – store properly to avoid waste generation (spills, leaks)
    - Use slow release or naturally derived (organic) fertilizers
    - Train employees in the proper application of lawn care products
    - Develop zero input/low input lawns
    - Consider alternative landscape techniques (i.e. naturescaping, xeriscaping)
    - Plant trees away from sewer lines or other underground utilities
    - Use drip irrigation techniques for landscaping

4. INSPECTION PROCEDURES

    - Routinely monitor lawns to identify problems during their early stages
    - Identify nutrient/water needs of plants, inspect for problems by testing soils

5. MAINTENANCE PROCEDURES

    - Minimize/eliminate fertilizer application
    - Leave grass clippings on lawn, or mulch clippings into lawn
    - Limit watering as necessary to supplement rainwater (1 inch/week is adequate)
    - Mow with sharpened blades set high (3 inches) – remove only the top 1/3 of the leaves
    - Water plants in the early A.M.

6. ADVISORY

    - Refer to the Cornell University website (Dept. of Horticulture)

## LANDSCAPING AND LAWN CARE INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Grass/plant condition | Wilted/brown leaves | Yes No | ❑ Add water |
| General area | Barren soils | Yes No | ❑ Re-seed, cover with hay or burlap to prevent runoff |

Date of Inspection _____ Name_____

Frequency _____

## SPILL RESPONSE AND PREVENTION
## POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY MATERIALS THAT IMPACT STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Liquids associated with vehicle/equipment maintenance products (oils, fuels, antifreeze, etc.)
    - Rock salt
    - Chemicals (fertilizers, pesticides)

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity
    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Keep all materials properly stored in closed, labeled containment systems
    - Use secondary containment systems where appropriate
    - Obtain spill recovery materials for immediate response to a spill

4. INSPECTION PROCEDURES

    - Inspect secondary containment systems, oil/water separators periodically
    - Inspect containers for leaks, areas near storm receiver inlets and outlets, floor drains for indications of spills

5. MAINTENANCE PROCEDURES

    - Use reusable spill clean up materials (sponge mops, oil absorbent pads, etc.)
    - Pump out oil water separators as needed
    - Protect drains with oil absorbent materials
    - Clean out receivers on regular schedule
    - Remove spilled salt from salt loading area

6. ADVISORY

    - Report petroleum spills (as necessary) to the NYSDEC (851-7220 or 1-800-457-7362)
    - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## SPILL RESPONSE AND PREVENTION INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Products/waste storage areas | Uncovered/deteriorating containers<br>Materials spilled, leaks | Yes No | ❑ Cover/replace<br>❑ Clean up |
| Equipment storage areas | Fluid leaks | Yes No | ❑ Clean up |
| Secondary containment systems | Structural deterioration<br>Leakage of fluids | Yes No | ❑ Repair/replace<br>❑ Clean up |
| Oil/water separators | Excessive amounts of contaminants | Yes No | ❑ Pump out |
| Floor drains, storm receiver inlets and outlets | Accumulation of contaminants | Yes No | ❑ Clean up/remove |

Date of Inspection _____ Name_____

Frequency _____

# PEST CONTROL
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Runoff of pesticides may harm aquatic life, may contaminate water

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity to aquatic plants and animals

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Purchase only enough pesticides necessary for one year – store properly to avoid waste generation (spills, leaks, product deterioration)
    - Minimize/eliminate pesticide application, use lowest toxicity pesticides
    - Do not apply pesticides immediately prior to or during rain events
    - Ensure that employees are properly trained and certified in pesticide application techniques and safety
    - Develop zero input, low input lawns
    - Eliminate food, water, and shelter for pests
    - Adopt integrated pest management (IPM) techniques
    - Adopt alternatives to pesticides options (i.e. use mechanical traps, physical methods for removal, or biological controls)

4. INSPECTION PROCEDURES

    - Identify pests – are levels acceptable or must action be taken to control pests?
    - Inspect pesticide inventory – properly dispose of out-of-date pesticide materials

5. MAINTENANCE PROCEDURES

    - Inspect pest traps (i.e. bait boxes) regularly – remove (and properly dispose of) dead pests
    - Block/eliminate access to buildings/structures for pests
    - Remove pests (insects) by hand

6. ADVISORY

    - Abide by NYSDEC regulations (6NYCRR Part 325) pertaining to this topic
    - Refer to the Cornell University website (Dept. of Horticulture)

# PEST CONTROL INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Pesticide storage area | Excessive amounts of pesticides<br>Spilled pesticides<br>Empty containers<br>No security or access control | Yes No | ❑ Reduce volumes, implement IPM<br>❑ Clean up<br>❑ Properly dispose<br>❑ install |
| Application equipment | Improper amounts of pesticides applied | Yes No | ❑ Properly calibrate |
| Floor | Drain system<br>Not curbed around perimeter<br>No impermeable surface | Yes No | ❑ Eliminate<br>❑ Install curbing<br>❑ Install impermeable surface |

Date of Inspection _____ Name_____

Frequency _____

**PET WASTE COLLECTION**
**POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES**

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Municipal animal shelters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand
    - Solids loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - House all animals in an enclosed, roofed structure
    - ID/utilize "permitted" waste disposal facilities for animal wastes

4. INSPECTION PROCEDURES

    - Inspect shelter regularly for necessary cleanup/removal of wastes

5. MAINTENANCE PROCEDURES

    - Remove spilled food, animal wastes on a regular basis

6. ADVISORY

    - None

# PET FACILITY MAINTENANCE INSPECTION CHECKLIST

Facility Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Animal Housing area | Excessive amounts of waste<br><br>Dead animals | Yes | No | ❑ Remove/rinse to floor drain (to sanitary sewer)<br>❑ Bag and remove |
| Facility's floor drain | Discharges directly to environment | Yes | No | ❑ Connect to sanitary sewer |

Frequency of Inspection Daily _____ Name _____

Date _____

# SEPTIC SYSTEM MANAGEMENT
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Ponding of improperly treated wastewaters (on the surface of a leach field or a sand filter system) can increase the biochemical oxygen demand of receiving waters.
    - Excessive amounts of disinfectant (i.e. chlorine) applied to a wastewater discharge from a sand filter system can cause toxicity to aquatic plants and animals

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Divert stormwater runoff (i.e. from roof drains) away from septic system
    - Divert groundwater (sump pump) discharges away from septic system
    - Locate swimming pools away from the septic system (at least 20' from the septic tank, at least 35' from the closest edge of the leach field or sand filter system)
    - Prevent problems caused by vegetation - growth of woody plants on the system
    - Prevent hydraulic loading - "Spread out" the use of devices which use large volumes of water across the entire day – clothes washing, dish washing, bathing, repair leaky fixtures
    - Minimize water usage by using flow restrictors on potable water distribution devices (i.e. shower heads, water faucets)

4. INSPECTION PROCEDURES

    Physical evidence of problems:

    - "back up" of wastewater in sewer lines
    - sewage odors
    - leach field/sand filter - wetness/ponding on surface
    - overflow of wastes from system components
    - heavy vegetation (woody plants) growth on system components

5. MAINTENANCE PROCEDURES

    - "Pump out" the septic tank as needed (NYSDEC recommends once/year)
    - Mow surface vegetation regularly
    - Prevent "heavy equipment" from driving on top of the system components

6. ADVISORY

    - Obtain site plan/site sketch of system, and retain for reference.

# SEPTIC SYSTEM MANAGEMENT INSPECTION CHECKLIST

Unit ID:_____NYSDEC Permit #_____ Location_____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Septic tank cover | Broken/cracked? | Yes | No | ❑ Replace |
| Distribution box | sewage overflowing, distribution box level? | Yes | No | ❑ Clean out<br>❑ Re-level |
| Leach field or sand filter | sewage on surface, odors, excessive vegetation growth | Yes | No | ❑ Clean out distribution lines<br>❑ Cut vegetation |
| Disinfection system (if present) | Operating improperly | Yes | No | ❑ Check/repair equipment |
| Outfall | Improper chlorine residual | Yes | No | ❑ Perform monitoring, sampling/analysis as permit requires |

Frequency of Inspection _____ Last pump out (date) _____

Date of Inspection _____ Name_____

(If unit is a HOLDING TANK, pump out schedule)_____

# VEHICLE/EQUIPMENT MAINTENANCE
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

   - Trace amounts of metals/hydrocarbons are found in materials (i.e. fuels, antifreeze, batteries, motor oils, grease, parts cleaning solvents) that are typically used in maintenance operations

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

   - Toxicity
   - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

   - Conduct maintenance work indoors – if work must be performed outside, guard against spillage of materials that could discharge to storm receivers
   - Seal floor drains that discharge directly to the environment, if possible
   - Initiate single purpose use of vehicle bays – dedicate one (or more) bays that have no (or sealed) floor drains for repairs/maintenance
   - Clean up spilled materials immediately, using "dry" methods
   - Install pretreatment systems (oil/water separators) where necessary in sewer lines to capture contaminants (oil, grit), and maintain as needed
   - Never leave vehicles unattended while refueling
   - Identify appropriate recycling/disposal options for wastes

4. INSPECTION PROCEDURES

   - Inspect (for maintenance purposes) floor drain systems, oil/water separators
   - Monitor "parked" vehicles/equipment for leaks

5. MAINTENANCE PROCEDURES

   - Maintain a clean work area – remove contaminants from floors, drains, catch basins, using "dry" methods
   - Use non-hazardous cleaners. Use non chlorinated solvents instead of chlorinated solvents
   - Repair or replace any leaking containers
   - Use steam cleaning /pressure washing instead of solvent for parts cleaning
   - Store waste fluids in properly capped, labeled storage containers
   - Store batteries in leak-proof, compatible (i.e. non reactive) containers
   - Rinse grass from lawn care equipment on permeable (grassed) areas
   - Protect against pollution if outside maintenance is necessary (cover storm receivers, use secondary containment vessels, etc.)

6. ADVISORY

   - Report petroleum spills (as necessary) to the NYSDEC (851-7220 or 1-800-457-7362)
   - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## VEHICLE AND EQUIPMENT MAINTENANCE/STORAGE AREA INSPECTION CHECKLIST

Unit ID: _____ Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Truck/equipment | Leaks/spills | Yes | No | ❑ Clean spill, repair leak, capture fluids in drip pan |
| Salt/sand spreader | Improper amounts of product applied | Yes | No | ❑ Recalibrate |
| Lawn care equipment | Improper operation | Yes | No | ❑ Inspect/repair |

Date of Inspection _____ Name _____

Frequency _____

# VEHICLE/EQUIPMENT WASHING
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

   - Nutrients (biodegradable soaps)
   - Metals
   - Petroleum based wastes (organic pollutants)

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

   - Biochemical oxygen demand from nutrient sources
   - Toxicity
   - Hydraulic loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

   - Initiate single purpose use of vehicle bays - dedicate only one bay for washing (with floor drain system)
   - Perform cleaning with pressurized cold water, without the use of soaps, if wastewaters will flow to a **storm sewer** system
   - Use minimal amounts of biodegradable soaps **only** if wastewaters will discharge to a **sanitary sewer** system
   - Rinse with hoses that are equipped with automatic shutoff devices and spray nozzles
   - Steam clean (without soap) where wastes can be captured for proper disposal (i.e. oil/water separator)

4. INSPECTION PROCEDURES

   - Inspect floor drain systems regularly - use only those that discharge to a sanitary sewer, identify the need for cleaning of catch basins, oil/water separators

5. MAINTENANCE PROCEDURES

   - Map storm drain locations accurately to avoid illegal discharges
   - Perform steam cleaning or pressure washing where wastes can be captured for proper disposal
   - Take precautions against excess use of/spillage of detergents

6. ADVISORY

   - Require all facilities to connect floor drain systems to sanitary sewers (if available)
   - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

# VEHICLE AND EQUIPMENT WASHING AREA INSPECTION CHECKLIST

Facility location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Designated "wash only" area | No impermeable pad with wastewater collection system | Yes No | ❑ Designate/construct area |
| Wastewater discharge location | Does not flow to either a holding tank or to sanitary sewers | Yes No | ❑ Properly relocate discharge |
| Washing/degreasing compounds | Solvent based | Yes No | ❑ Change to biodegradable products |
| Floor drain sump | Nonexistent | Yes No | ❑ Install and maintain sump, remove debris |
| Oil/water separator | Excessive oils/sludges | Yes No | ❑ Clean out contaminants |
| Catch basin | Non existent, accumulation of contaminants | Yes No | ❑ Install/maintain catch basin |

Date of Inspection _____ Name_____

Frequency _____

# ROADWAY AND BRIDGE MAINTENANCE
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

- Road salt components - sodium, calcium, and chlorides
- Hydrocarbons
- Particulates – such as dry paint or abrasive compounds, road debris
- Debris

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

- Particulate matter
- Toxicity (paint – may contain metals such as lead, barium, cadmium)

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

- Incorporate preventive maintenance and planning for regular operations & maintenance activities
- Pave in dry weather only.
- Stage road operations and maintenance activity (patching, potholes) to reduce spillage. Cover catch basins and manholes during this activity.
- Clean up fluid leaks or spills from paving equipment/materials immediately
- Restrict the use of herbicides/pesticide application to roadside vegetation
- Use porous asphalt for pothole repair and shoulder work
- Sweep and vacuum paved roads and shoulders to remove debris and particulate matter
- Maintain roadside vegetation; select vegetation with a high tolerance to road salt
- Control particulate wastes from bridge sandblasting operations
- Use calcium magnesium acetate for deicing around bridges to minimize corrosion
- Clean out bridge scuppers and catch basins regularly
- Direct water from bridge scuppers to vegetated areas
- Mechanically remove (i.e. sweep) debris from bridge deck and structure prior to washing

4. INSPECTION PROCEDURES

- Inspect paving, sweeping, vacuuming, and all other maintenance vehicles/equipment as appropriate
- Inspect roads and bridges for implementation of applicable BMP's

5. MAINTENANCE PROCEDURES

- Clean bridge scuppers routinely and keep free of debris
- Direct runoff water from bridges to vegetated areas
- Install catch basins in place of bridge scuppers
- Use tarps, booms, and vacuums during painting or blasting activities (refer to reference information to control/capture particulate matter)
- Repair leaking/defective containers or equipment on paving equipment

6. ADVISORY

- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations

## ROADWAY AND BRIDGE MAINTENANCE INSPECTION CHECKLIST

Bridge No.: _____ BIN: _____ Carried: _____ Crossed: _____

Wetlands Present: Y N Stream Restriction: Y N If yes, Dates: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/ REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Bridge Deck (Top Side) | Debris Along Curb | Yes No | ❑ Sweep bridge, deposit debris on bank 50' from sweep and spread out<br>❑ Wash Bridge Deck |
| Bridge Seats at Abutment, or Top of Piers | Debris on Seat or Top of Pier | Yes No | ❑ Remove debris, deposit on stream banks<br>❑ Bird Nest Present? If yes, wait until nesting is complete.<br>❑ Wash Abutment & Pier |
| Washing of Superstructure | Debris – Salts on Superstructure | Yes No | ❑ Bird Nest Present? If yes, wait until nesting is complete.<br>❑ Flaking Paint Present? If yes, do not wash.<br>❑ Stream Restriction? If yes, wait until restrictions are removed.<br>❑ Wash Superstructure |

# ALTERNATIVE DISCHARGE OPTIONS FOR CHLORINATED WATER POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Discharge of chlorinated (i.e. swimming pool, POTW) waters to surface waters can injure or kill aquatic life

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity – very low levels of chlorine can detrimentally affect aquatic life
    - Hydraulic loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

    - Dechlorinate pool water before any discharge, be it over land or to the sanitary sewer, or allow the "disinfectant" to dissipate with sunlight, use, etc. prior to discharge
    - Use ultraviolet radiation or osmosis to disinfect water/wastewater
    - Backwash water should be discharged to the sanitary sewer, if available – if not available, discharge water over vegetated areas, not to surface waters

4. INSPECTION PROCEDURES

    - Check chlorine residuals prior to discharge.
    - Do not discharge wastewaters into the sanitary sewer system during periods of high flow.

5. MAINTENANCE PROCEDURES

    - Maintain proper levels of chlorine residuals in pool.
    - Allow disinfectant to dissipate prior to discharge of pool waters.

6. ADVISORY

    - Obtain permission from the municipal POTW prior to discharging any chlorinated pool waters to a sanitary sewer system.

## ALTERNATIVE DISCHARGE OPTIONS FOR CHLORINATED WATER INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Pools, hot tubs | Need to empty unit and replace water | Yes No | ❑ Discharge to sanitary sewers or to vegetated areas after the disinfectant dissipates, not to storm sewers or surface waters |

Date of Inspection _____ Name_____

Frequency _____

# HAZARDOUS AND WASTE MATERIALS MANAGEMENT
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

- Lube oils
- Coatings and their compatible solvents (paints, thinners, etc.)
- Anti freeze
- Cleaning agents
- Fuels (gas, diesel, kerosene)

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

- Biochemical oxygen demand
- Toxicity to aquatic plants and wildlife
- Particulate loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

- Ensure that all materials are stored in closed, labeled containers – if stored outside, drums should be placed on pallets, away from storm receivers – inside storage areas should be located away from floor drains
- Eliminate floor drain systems that discharge to storm drains, if possible
- Use a pretreatment system to remove contaminants prior to discharge
- Reduce stock of materials "on hand" – use "first in/first out" management technique
- Use the least toxic material (i.e. non hazardous) to perform the work
- Install/use secondary containment devices where appropriate
- Eliminate wastes by reincorporating coating/solvent mixtures into the original coating material for reuse
- Recycle materials if possible, or ensure proper disposal of wastes

4. INSPECTION PROCEDURES

- Physical on-site verification of sealed floor drains (or redirected to sanitary sewer)
- Regular inspection of material storage areas (inside and outside)
- Regular inspection and cleaning of oil/water separators by qualified contractor
- Inspect stormwater discharge locations regularly (for contaminants, soil staining, plugged discharge lines)

5. MAINTENANCE PROCEDURES

- Repair or replace any leaking/defective containers, and replace labels as necessary
- Maintain caps and/or covers on containers
- Maintain aisle space for inspection of products/wastes

6. ADVISORY

- Abide by NYSDEC regulations (6NYCRR Part 372) and OSHA regulations (29 CFR Part 1910) pertaining to these topics
- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## HAZARDOUS AND WASTE MATERIALS MANAGEMENT INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Outside storage areas | Weathering | Yes | No | ❑ Protect from weathering – store on pallets, cover |
| Salt piles | Salt staining | Yes | No | ❑ Cover with tarps |
| Soil staging areas | Silt runoff | Yes | No | ❑ Cover with tarps, install physical barriers |
| Aboveground storage tanks | Deterioration | Yes | No | ❑ Inspect/repair/maintain, install secondary containment |
| Inside storage areas | Potential for discharges | Yes | No | ❑ Seal floor drains, install secondary containment |
| Drums, other containers | Deterioration<br>Uncovered | Yes | No | ❑ Repair/replace<br>❑ Cover/cap |

Date of Inspection _____ Name_____

Frequency _____

## OPERATIONAL BY PRODUCTS/WASTES
## POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Potential for leaching of toxic and biologic contaminants to receiving waters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity
    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Post "no dumping" signs
    - Illuminate area if possible
    - Prevent access – erect barriers
    - Identify the by products/wastes that should be recycled (i.e. paper, cardboard) or can be legally disposed of on municipal lands (i.e. deer carcasses) by referencing NYSDEC regulations (6NYCRR PART 360)

4. INSPECTION PROCEDURES

    - Regularly scheduled inspections - for maintenance concerns
    - Unscheduled patrolling of areas by police

5. MAINTENANCE PROCEDURES

    - Clean up and dispose of "illegally dumped" materials, trash/debris in accordance with environmental regulations
    - Cut and remove vegetation

6. ADVISORY

    - Abide by NYSDEC regulations (6NYCRR Part 360) pertaining to this topic
    - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## OPERATIONAL BY-PRODUCTS AND WASTES INSPECTION CHECKLIST

Location _____

(example. Temporary dumping areas for bulky trash items)

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | ACTION |
|---|---|---|---|
| Condition of general area | Possible runoff to/ contamination of storm sewer or water body | Yes No | ❑ Remove<br>❑ Fix |
| Type of material/waste observed? | Appropriate? | Yes No | ❑ Remove to appropriate container/location |
| Security | Regular policing of area, Location properly secured/closed/locked? | Yes No | ❑ Secure waste area |
| Disposal | Past disposal date? | Yes No | ❑ Dispose timely |

Inspection Frequency _____

Last Clean-up Date _____

Date of Inspection _____ Name_____

# CATCH BASIN AND STORM DRAIN SYSTEM CLEANING
# POLLUTION PREVENTION/ GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

- **Catch basins** capture grit and debris, which, if not removed in a timely fashion, can discharge toxic and biological pollutants during rain and/or snow melt events
- **Storm drainage systems**, while not designed for capture of solid materials, can perform in the same manner with similar results.
- **Storm ditches**, if stripped of vegetation during cleaning, can result in silt deposition in receiving waters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

- Toxicity – heavy metals, organic compounds, etc.
- Biochemical oxygen demand
- Sediment loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

- Address:
  - storm drain receivers and (below grade) storm sewer systems
  - parking lot receivers
  - open ditches
  - catch basins and floor drain systems inside of buildings should be either:
    - sealed to prevent discharge
    - "permitted" by NYSDEC
    - discharged to sanitary sewers
- Contaminated wastewaters should not be discharged to a catch basin/street receiver/ditch
- Increase frequency of cleaning, as necessary
- Repair/replace storm drain receiver and catch basin receiver grates as necessary

4. INSPECTION PROCEDURES

- Physical inspection – prioritize storm drain systems and catch basins – catch basins on steep grades may need more frequent cleaning
- Clean catch basin when depth of deposits are >1/3 the depth from the bottom of the basin to the invert of the lowest pipe/opening into or out of basin – Institute temporary street parking bans to facilitate access to catch basins
- Ditch inspections – ID problems while traveling to job site
- Storm event inspection – identify pollution problems (i.e. sediments) to determine the need for additional protective measures
- Post storm event inspection – ID problems (i.e. blockages)

5. MAINTENANCE PROCEDURES

- Catch basins/storm sewer pipe – cleaning in spring to remove sand/grit/salt from winter road maintenance, cleaning in fall to remove leaves/silt/debris
- Established ditch:
  - Maintain proper slope
  - Maintain vegetation by cutting (to capture sediment) – Do not allow vegetation to grow to a height that would impair sight lines of drivers of motor vehicles
  - Remove obstacles/ debris – (i.e. trash, tree branches, brush, cut vegetation)
  - Excavation/ditch scraping – if necessary, use devices (i.e. hay bales, silt fence) to capture sediment prior to stormwater discharge into receiving waters, reseed ditch
- New installation – capture particulate matter – install sediment basins/other devices in ditch
- Proper disposal of debris

6. ADVISORY

- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## CATCH BASIN AND STORM DRAIN SYSTEM CLEANING INSPECTION CHECKLIST

Road Name: _____ Road Number: _____ Road Section: From: _____ To: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/ REPAIRS NECESSARY | | ACTION | LOCATION (House number, distance from intersection) |
|---|---|---|---|---|---|
| Catch Basin/ Drop Inlet | Deterioration of Structure | Yes | No | ❑ Repair Structure or Grate<br>❑ Replace Structure or Grate | |
| | Clogged Inlets During or After Storm Event | Yes | No | ❑ Clean Grate / Inlet | |
| | Deposits in Structure | Yes | No | ❑ Clean Out Structure | |
| Storm Manhole | Deterioration of Structure | Yes | No | ❑ Repair Structure or Cover<br>❑ Replace Structure or Cover | |
| | Deposits in Structure | Yes | No | ❑ Clean Out Structure | |
| Storm Sewer Piping | Clogged Pipe | Yes | No | ❑ Clean Out Pipe | |
| | Deteriorated Pipe | Yes | No | ❑ Replace Pipe | |
| Ditches (Pollutants) | Excessive Vegetation | Yes | No | ❑ Mow Vegetation<br>❑ Scheduled Ditch Cleaning | |
| | Debris (branches, litter, garbage, etc.) | Yes | No | ❑ Clean Out Ditch | |
| | Excessive Siltation | Yes | No | ❑ Clean Out & Regrade Ditch | |
| Roadside / Cross Culverts | Clogged Pipe | Yes | No | ❑ Clean Out<br>❑ Review Size & Replace<br>❑ Clean Out & Regrade Ditch | |
| | Deteriorated Pipe | Yes | No | ❑ Replace Pipe<br>❑ Line Pipe | |
| Sediment Basins | Excessive Vegetation | Yes | No | ❑ Mow | |
| | Excessive Sediment Deposits | Yes | No | ❑ Clean Out Basin | |
| Outfall | Pollutants | Yes | No | ❑ Rip-rap | |

Date of Inspection _____ Name _____ Frequency _____

# STREET CLEANING AND MAINTENANCE
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATER (SURFACE WATERS)

   - Poorly maintained streets allow for a "build up" of trash, grit, and debris, from which sediment and toxic/biological pollutants can be "washed out" during rain and /or snow melt events.
   - Street repair/paving processes use materials that can contaminate receiving waters if they interact with stormwater.

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

   - Particulate matter – can cause sediment loading
   - Biochemical oxygen demand
   - Toxicity to aquatic plants and wildlife

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

   - Street sweeping/vacuuming - at regular intervals, and "as needed"
   - Perform operations such as paving in dry weather only.
   - Prior to road reconstruction, consider/evaluate the use of "shouldered roads" instead of "curbed roads"
   - Maintain roadside vegetation; select plants/trees that can withstand the action of road salt. Direct runoff to these areas.

4. INSPECTION PROCEDURES

   - Inspect streets, and plan (as needed) for maintenance/repairs
   - Prioritize – some streets (i.e. those with high traffic flows, on flat grades, or with many trees) may need more frequent cleaning

5. MAINTENANCE PROCEDURES

   - Spring sweeping/vacuuming – remove salt/sand residues
   - Fall sweeping, collection of leaves at appropriate time intervals
   - Dry sweep or vacuum streets during dry weather
   - Initiate temporary street by street parking bans to allow access for cleaning
   - Maintain equipment - check for/repair fluid leaks
   - Stage road operations and maintenance activity (patching, pothole repair) to reduce spillage of materials. Cover catch basins and manholes during activity

6. ADVISORY

   - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## STREET CLEANING AND MAINTENANCE INSPECTION CHECKLIST

Location/Section of Road _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Roads (curb line) | Debris, grit, stone | Yes | No | ❑ Shovel or Vacuum |
| Milling | Broken pavement (excavated material) | Yes | No | ❑ Cover storm inlets, shovel, vacuum |
| Paving | Tack coat overspray | Yes | No | ❑ Cover storm inlets |
| Storm drain inlets | Broken brick, block, mortar | Yes | No | ❑ Repair |
| Roadside vegetation | Too high<br>None observed | Yes<br>Yes | No<br>No | ❑ Cut<br>❑ Re-seed |

Date of Inspection _____ Name_____

Frequency _____

# ROAD SALT STORAGE AND APPLICATION
# GOOD HOUSEKEEPING/POLLUTION PREVENTION PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

   - Salt is very soluble in water, and, in high concentrations, can have a deleterious effect on plants and aquatic life.

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

   - Toxicity

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

   - Require covered facility for salt storage (prevents lumping and run-off loss), and size properly for seasonal needs
   - Store salt on highest ground elevation to allow for infiltration of stormwater
   - Calibrate salt spreaders for proper application
   - Consider alternative deicing materials (i.e. calcium chloride, magnesium chloride)
   - Use a wetting agent with salt to minimize "bouncing" during application
   - Cover salt loading area, or build into storage shed
   - Unload salt deliveries directly into storage facility, or if not possible, move inside immediately

4. INSPECTION PROCEDURES

   - Look for physical evidence of problems:

     - inspect salt storage shed for leaks, structural problems
     - inspect salt piles for proper coverage, tarps for leaks or tears
     - inspect salt application equipment
     - inspect salt regularly for lumping or water contamination
     - inspect surface areas for evidence of runoff – salt stains on ground near and around the salt shelter, loading area, or downslope
     - inspect for excessive amounts of salt on roads

5. MAINTENANCE PROCEDURES

   - Service trucks and calibrate spreaders regularly to ensure accurate, efficient distribution of salt
   - Educate and train operators on hazards of over-salting to roads and environment
   - Repair salt storage shed – structural problems can lead to salt spillage
   - Repair/replace tarps

6. ADVISORY

   - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

## ROAD SALT STORAGE AND APPLICATION INSPECTION CHECKLIST

Unit ID: _____ Location _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Storage shed | Salt outside of shed | Yes | No | ❑ Move salt into shed |
| Truck loading area | Salt on ground | Yes | No | ❑ Pick up, load onto truck<br>❑ do not overfill truck |
| Roads – (sites of application) | Excessive salt on ground | Yes | No | ❑ Remove by sweeping? |
| Salt spreader | Excessive salt on ground | Yes | No | ❑ Recalibrate salt spreader? |

Date of Inspection _____ Name _____

**ROAD KILL COMPOSTING OPERATIONS**
**GOOD HOUSEKEEPING/POLLUTION PREVENTION PRACTICES**

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Potential for leaching of biologic contaminants to receiving waters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Establish compost pile/windrow on a well drained, impervious surface that has minimal slope – segregate from other operations
    - Identify the proper types of carcasses (typically, deer) that should be composted
    - Locate compost piles at least 200 ft. away from receiving waters or wetlands
    - Prevent access by vermin/scavengers – erect barriers (i.e. snow fence) around pile

4. INSPECTION PROCEDURES

    - Check for odors, temperature of compost, exposed carcasses
    - Keep records (use a daily log)

5. MAINTENANCE PROCEDURES

    - Monitor temperatures
    - Take samples, analyze for pathogens
    - Establish windrows
    - Prevent erosion
    - Recycle completely composted material

6. ADVISORY

    - Abide by NYSDEC regulations (6NYCRR Part 360) pertaining to this topic
    - Refer to NYSDOT guidance

## ROAD KILL COMPOST SITE INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Compost pile | Exposed Carcasses | Yes | No | ❑ Add cover material (wood chips, compost) |
| | Odors | Yes | No | ❑ Cover with wood chips<br>❑ Add lime |
| | Liquid runoff (leachate) | Yes | No | ❑ Absorb with wood chips, return to compost pile |
| | Animals scavenging | Yes | No | ❑ Fence area<br>❑ Temporarily cover with tarp |
| | Wood chips too dry<br>Wood chips too wet | Yes<br>Yes | No<br>No | ❑ Add water<br>❑ Allow to dry |
| | Insufficient compost temperature | Yes | No | ❑ Temporarily cover with tarp |

Date of Inspection _____ Name _____

Frequency _____

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# MARINA OPERATIONS
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

   - Liquids associated with boat maintenance products (oils, fuels, antifreeze, wood preservatives, etc. and particulate matter (i.e. boat bottom paint from hull sanding) can contain toxics
   - Boat sewage can contain pathogenic bacteria that contribute increased biochemical oxygen demand to waterways
   - Barren soils can contribute to sedimentation

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

   - Biochemical oxygen demand
   - Toxicity
   - Sediment loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

   - Construct and maintain pump out stations (for sanitary wastes)
   - Build and maintain fish cleaning stations
   - Stabilize shoreline
   - Designate locations for boat maintenance away from the water
   - Minimize impervious areas – install vegetated buffer strips (i.e. grass, shrubs)
   - Provide covered trash receptacles, spill clean up kits at fueling stations
   - Educate (posters, signage) boaters and other marina users of potential problems

4. INSPECTION PROCEDURES

   - Identify areas of runoff that lack vegetation
   - Regularly inspect fueling stations (including tanks and piping), maintenance areas for spills, other potential sources of pollution
   - Regularly check (and empty as necessary) fish cleaning stations, sewage pump out stations, trash cans

5. MAINTENANCE PROCEDURES

   - Empty trash cans and pump out stations as needed
   - Maintain vegetated areas between the water and work areas
   - Replace spill clean up kits as necessary

6. ADVISORY

   - Refer to: Shipshape Shores and Waters: A Handbook for Marina Operators and Recreational Boaters - http://www.epa.gov/owow/nps/marinashdbk2003.pdf

# MARINA OPERATIONS INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Trash cans, sewage pump out stations, fish cleaning stations | Full | Yes<br>Yes | No<br>No | ❑ Empty, dispose of wastes properly |
| Fueling stations | Spills | Yes<br>Yes | No<br>No | ❑ Clean up |
| Vegetated areas | Barren soils | Yes | No | ❑ Re-vegetate |
| | | Yes | No | ❑ |
| | | Yes | No | ❑ |
| | | Yes | No | ❑ |

Date of Inspection _____ Name_____

Frequency_____

Rick\stwtr\insp cklsts

# CONSTRUCTION AND LAND DISTURBANCE
# POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Sediment runoff (i.e. silt, debris) can affect fish reproduction and habitat
    - Removal of shade trees from stream banks can increase water temperature which can result in reduced dissolved oxygen content in streams

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Particulate matter – can cause sediment loading
    - Biochemical oxygen demand – increases with temperature, depletes oxygen

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Plan the construction and/or land clearing activities so that soil is not exposed for long periods of time
    - Minimize compaction of soils and impervious cover
    - Maximize opportunities for infiltration
    - Install sediment control devices before disturbing soil
    - Limit grading to small areas
    - Stabilize site to protect against sediment runoff
    - Protect against sediment flowing into storm drains
    - Maintain native vegetation (especially near waterways)
    - Install sediment barriers on slopes or divert stormwater

4. INSPECTION PROCEDURES

    - Regularly scheduled inspections (of sediment control devices, erosion safeguards)
    - Inspect during storm or snow melt events

5. MAINTENANCE PROCEDURES

    - Check/repair all devices that have been installed to ensure protection against erosion

6. ADVISORY

    - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)
    - NY State Standards and Specifications for Sediment and Erosion Control
    - NY State Stormwater Management Design Manual

## CONSTRUCTION AND LAND DISTURBANCE INSPECTION CHECKLIST

Location: _____

| COMPONENTS/ITEMS TO CHECK | PROBLEMS OBSERVED | MAINTENANCE/REPAIRS NECESSARY | | ACTION |
|---|---|---|---|---|
| Sediment control devices | None observed<br>In disrepair | Yes<br>Yes | No<br>No | ❑ Install<br>❑ Repair |
| Sediment barrier devices | None observed<br>In disrepair | Yes<br>Yes | No<br>No | ❑ Install<br>❑ Repair |
| | | Yes | No | ❑ |
| | | Yes | No | ❑ |
| | | Yes | No | ❑ |
| | | Yes | No | ❑ |

Date of Inspection _____ Name_____

Frequency initial, and as needed (coinciding with storm events)

Rick\stwtr\insp cklsts

# ADEQ MS4 GENERAL PERMIT ARR040000

ARR040000

# AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM AND THE ARKANSAS WATER AND AIR POLLUTION CONTROL ACT

In accordance with the provisions of the Arkansas Water and Air Pollution Control Act (Act 472 of 1949, as amended, Ark. Code Ann. 8-4-101 et seq.), and the Clean Water Act (33 U.S.C. 1251 et seq.),

**Regulated Small Municipal Separate Storm Sewer Systems (MS4's) Located within the State of Arkansas**

are authorized to discharge, in accordance with the requirements and other conditions set forth in this permit, to all receiving waters except as stated in Part 1.3.3 of this permit.

Only those operators of MS4's who submit the required Notice of Intent (NOI) in accordance with Part 2 and Stormwater Management Plan (SWMP) in accordance with Part 3 of this permit are authorized to discharge stormwater under the provisions of this general permit.

For facilities that are eligible for coverage under a General Permit (GP) the Department sends a cover letter (Notice of Coverage with tracking permit number which starts with ARR04) and a copy of the permit to the facility. The cover letter includes the Department's determination that a facility is covered under the GP and may specify alternate requirements outlined in the permit such as modified sampling frequencies for certain parameters or the inclusion of monitoring for parameters in addition to those requiring regular monitoring.

Effective Date: August 1, 2014

Expiration Date: July 31, 2019

Ryan Benefield, P.E.
Deputy Director, ADEQ

1/31/14
Issue Date

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## PART 1. COVERAGE UNDER THIS PERMIT

**NOTE:** Only a select sub-set of small MS4s, referred to as ***regulated*** **small MS4s**, is covered by the Phase II, either through automatic designation or designation on a case-by-case basis by ADEQ.

### 1.1. Permit Area

This permit covers the State of Arkansas.

### 1.2. Eligibility

1.2.1. All operators of small municipal separate storm sewer systems (MS4s) meeting the eligibility requirements of this permit are required to comply to permit terms unless the director of the Arkansas Department of Environmental Quality (ADEQ) has given written notification to an MS4 that coverage under this general permit is inappropriate. The operators described in Parts 1.2.2, 1.2.3 and 1.2.4 must submit a Notice of Intent (NOI) in accordance with Part 2 of this permit and will thereafter be authorized to discharge under the terms and conditions of this general permit.

1.2.2. **Operators of MS4s in urbanized areas (Automatic Designation)**: Pursuant to 40 CFR 122.32, all operators of small MS4s, including non-traditional MS4s, fully or partially located in an urbanized area as determined by the 2000 and 2010 Decennial Census by the Bureau of the Census must apply for permit coverage.

1.2.3. **Operators of designated municipal MS4s**: Pursuant to 40 CFR 122.32, the Department has made the decision to set designation criteria for municipalities outside of designated urbanized areas to be covered under this permit. Municipalities with a population, according to the latest decennial census, of greater than 10,000 persons and with a population density of greater than 1,000 persons per square mile meeting one of following criteria are designated for permit authorization:

1.2.3.1. The MS4 directly discharges to a 303(d) listed Stream with pollutants of concern caused by stormwater; or

1.2.3.2. The MS4 Directly discharges to an Extraordinary Resource Water (ERW); or

1.2.3.3. The MS4 has had a 50% population growth rate between the 2000 Census and 2010 Census

1.2.4 **Operators Discharging to a Physically Interconnected Storm System.**

Any small MS4 located outside of an urbanized area that contributes substantially to the pollutant loadings of a physically interconnected MS4 regulated by the NPDES stormwater program.

1.2.5 **Operators of previously permitted small MS4s:** Operators of small MS4s which have previously been covered under a permit for discharge from their MS4 based on the 2000 Census must reapply for permit coverage.

1.2.6 **The following are types of authorized discharges:**

1.2.6.1 *Stormwater discharges.* This permit authorizes stormwater discharges to surface waters of the State from the small MS4s identified in Part 1.2, except as excluded in Part 1.3.

1.2.6.2 *Non-stormwater discharges.* The MS4s are authorized to discharge the following non-stormwater sources provided that ADEQ has not determined, and notified the MS4 in writing, these sources are substantial contributors of pollutants to the MS4: waterline flushing; landscape irrigation; rising ground waters; uncontaminated ground water infiltration (infiltration is defined as water other than wastewater that enters a sewer system, including sewer service connections and foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.); uncontaminated pumped ground water; discharges from potable water sources; foundation drains; uncontaminated air conditioning condensate; irrigation water; springs; water from crawl space pumps; footing drains; lawn watering; individual residential car washing; flows from riparian habitats and wetlands; dechlorinated swimming pool discharges; street wash water; and discharges or flows from emergency fire fighting activities.

**1.3. Limitations on Coverage:**

This permit does not authorize:

1.3.1. Discharges that are mixed with sources of non-stormwater unless such non-stormwater discharges are:

1.3.1.1. In compliance with a separate National Pollutant Discharge Elimination System (NPDES) permit, or

1.3.1.2. Determined by ADEQ not to be a substantial contributor of pollutants to surface waters of the State.

1.3.2. Stormwater discharges associated with industrial activity as defined in 40 CFR 122.26(b)(14)(i)-(xi) that are not in compliance with a separate NPDES permit. This includes stormwater discharges associated with construction activity as defined in 40 122.26(b)(14)(x) or 40 CFR 122.26(b)(15).

1.3.3. Discharges that ADEQ, prior to authorization under this permit, determines will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made prior to authorization, ADEQ may notify you that an alternative general permit or an individual permit application is necessary

in accordance with Part 5.17. However, ADEQ may authorize your coverage under this permit after you have included appropriate controls and implementation procedures in your SWMP designed to bring your discharge into compliance with water quality standards.

1.3.4. Discharges to 303(d) listed and TMDL waterbodies: If your MS4 discharges to waters identified on the current list of impaired waters under Section 303(d) of the Clean Water Act, you must review whether changes may be warranted in your Stormwater Management Program to reduce the impact of your discharge *in accordance with the requirements of Part 3.4.5.* If a TMDL(s) has been approved for a water body, you must review the adequacy of your Stormwater Management Program to meet the TMDL's Waste Load Allocation (WLA) set for stormwater sources. If a TMDL assigns an individual WLA specifically for your MS4's stormwater discharges, you must include that WLA as a Measurable Goal for your SWMP. If the Stormwater Management Program (SWMP) is not meeting the applicable requirements of the TMDL, you must modify your Stormwater Management Program accordingly. If the SWMP of a regulated municipality does not adequately address the requirements and objectives of the TMDL, ADEQ may notify you that an alternative permit application is necessary in accordance with Part 5.16.

**1.4. Waiver from coverage:**

1.4.1. The following exclusion may be obtained:

1.4.1.1. ADEQ may waive permit coverage if your MS4 serves a population of less than 1,000 within the urbanized area and if you are meeting the following criteria:

1.4.1.1.1 The MS4 system is not contributing substantially to the pollutant loadings of a physically interconnected MS4 that is regulated by the NPDES stormwater program (see 40 CFR § 123.35(b)(4)); and

1.4.1.1.2 if the MS4 discharges any pollutant(s) that have been identified as a cause of impairment of any water body discharged into, stormwater controls are not needed based on wasteload allocations that are part of an EPA approved or established "Total Maximum Daily Load" (TMDL) that addresses the pollutant(s) of concern.

**1.5. Obtaining Authorization**

1.5.1. To be authorized to discharge stormwater from small MS4s, the MS4 shall submit a completed NOI form, application fee and the Stormwater Management Program (SWMP) in accordance with the deadlines presented in Part 2.1 of this permit. MS4s with existing permit coverage do not need to submit an application fee because they are already annually invoiced.

1.5.2. The NOI, to be completed on a form furnished by ADEQ, shall be signed and dated in accordance with Part 5.7 of this permit.

1.5.3. Until notified in writing by ADEQ, dischargers who submit an NOI in accordance with the requirements of this permit are not covered by this permit. The Agency may deny coverage under this permit and require submittal of an application for an individual NPDES permit or alternative general permit based on a review of the NOI or other information (see Part 5.17).

1.5.4. Where an operator is added, removed or transferred after submittal of an NOI under Part 2 of this permit, a permit transfer form shall be submitted in accordance with Part 2 prior to the change.

## PART 2. AUTHORIZATION UNDER THIS PERMIT

### 2.1. Deadlines for Notification

2.1.1. *Renewal.* Existing MS4s must reapply for coverage no later than the effective date of this permit. To reapply, the MS4 shall submit a completed NOI form and SWMP in accordance with requirements in Part 3 of this permit to the ADEQ. MS4s previously covered will receive notification of the renewal along with instructions for getting coverage under the renewal permit. MS4s previously covered will continue being covered by the previous permit until authorized by ADEQ to be covered by this permit as long as they reapplied for coverage no later than the effective date of this permit.

2.1.2. *New designations.* If the MS4 is designated either by the 2010 census or meets the criteria of Part 1 after the census information has been reviewed, then the MS4 is required to submit an NOI, the SWMP and application fee to ADEQ within 180 days of notification from ADEQ that permit coverage is required.

2.1.3. *Submitting a Late NOI.* The MS4s are not prohibited from submitting an NOI after the dates provided in Part 2.1.1 or 2.1.2 of this permit. If a late NOI is submitted, the authorization is only for discharges that occur after permit coverage is granted. ADEQ reserves the right to take appropriate enforcement actions against MS4s that have not submitted a timely NOI.

### 2.2. Where to Submit

The permittee is to submit the NOI and SWMP, signed in accordance with the signatory requirements of Part 5.7 of this permit, to ADEQ at the following address:

ADEQ
Water Division, General Permits
5301 Northshore Drive
North Little Rock, AR 72118

Alternatively, you may submit the required documents in electronic format (.pdf) at the following email address: Water-permit-application@adeq.state.ar.us

### 2.3. Co-Permittees Under a Single NOI

The MS4 may partner with other MS4s to develop and implement the SWMP. The MS4 may also jointly submit an NOI with one or more MS4s. Their SWMP shall clearly describe which permittees are responsible for implementing each of the control measures.

## 2.4. Public Notification Requirements

After review of the required submitted documents for permit coverage, ADEQ will give the public access to the Notices of Intent for a minimum of 30 days. A link will be provided at ADEQ's MS4 webpage:
http://www.adeq.state.ar.us/water/branch_permits/general_permits/stormwater/ms4/ms4.htm.

Public comment will be accepted within a 30-day period, with the end date as specified by ADEQ's webpage. Methods for submitting comments to the Department will be included on this webpage.

On issues of public or ADEQ comment, the operator of the MS4 must, prior to permit coverage issuance:

2.4.1 Provide the MS4's responses to any unresolved public comments on the NOI received either by the MS4 during local participation and involvement efforts, or by ADEQ during ADEQ's public participation process, to ADEQ within thirty (30) days of the Director's request. Responses provided by the MS4 will be considered as part of ADEQ's decision-making process.

2.4.2 Modify, or include a schedule to modify, the SWMP as necessary after consideration of the public comments on the NOI or as required by the Director in response to such comments.

## 2.5. Modification of the Permit

The permit may be reopened and modified, in accordance with 40 CFR §122.62, §122.63, and §124.5, during the life of the permit.

## 2.6. Terminating Coverage

To terminate permit coverage, the permittee must submit a written Notice of Termination that contains facts or reasons supporting the request. The permittee is responsible for meeting the terms of this permit until the acceptance of the termination of authorization by the Department. For example, a Notice of Termination should be submitted if the permittee ceases stormwater discharges from the MS4.

## PART 3. STORMWATER MANAGEMENT PROGRAMS (SWMP)

NOTE: Existing permitted MS4 programs should already be in compliance with the majority of the following requirements unless the requirements were not covered under the previous permit. Permittees should continue to implement the existing programs until the renewal is approved by the State. The SWMP should be updated as necessary to comply with the new requirements of the permit.

### 3.1. Requirements

3.1.1. The permittee shall develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from the small MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements and the Clean Water Act. Permittees may use contracts, interagency agreements, or inter-jurisdictional agreements with other permittees to implement the SWMP based on the requirements outlined in Part 3.3. The SWMP should include management practices; control techniques and system, design, and engineering methods; and shall be modified to include provisions as ADEQ determines appropriate after its review of the program for the control of such pollutants. The SWMP shall include the following information for each of the six minimum control measures described in Part 3.2 of this permit:

3.1.1.1. The best management practices (BMPs) that the MS4 or another entity will or already does implement for each of the stormwater minimum control measures;

3.1.1.2. The measurable goals for each of the BMPs, the ones the MS4 believes to have the authority to implement, including, as appropriate, the months and years in which the MS4 will undertake required actions, including interim milestones and the frequency of the action. At a minimum, measurable goals shall be implemented to satisfy this general permit's performance standards;

3.1.1.3. The person or persons, including position title or titles, or just the position title and contact information responsible for implementing or coordinating the BMPs for the SWMP. The SWMP shall include a Table of Organization, including a primary point of contact, which identifies how implementation across multiple positions, agencies and departments will occur, and;

3.1.1.4. In addition to the requirements listed above, the permittee shall provide a rationale for how and why the permittee selected each of the BMPs and measurable goals for the SWMP. The MS4 shall develop and implement the program within five years of initially being granted Small MS4 general permit coverage. If an MS4 initially had coverage under a previous version of this permit, then the MS4 shall revise the program and its implementation to satisfy this general permit's performance standards within two years of when the MS4 coverage under this general permit was granted.

3.1.1.5. BMPs shall be reevaluated in situations where an MS4 discharges to an impaired waterbody where the evaluation of the impairment has determined the MS4 is a

contributor to the impairment. The enhanced BMPs shall be specifically addressed within the SWMP.

3.1.1.6. BMPs shall be reevaluated in situations where an MS4 discharges to a waterbody with an approved TMDL where the evaluation of the impairment has determined the MS4 is a contributor to the impairment. The enhanced BMPs shall be specifically addressed within the SWMP.

## 3.2. Minimum Control Measures

The six minimum control measures that shall be included in the SWMP are:

### 3.2.1. Public Education and Outreach on Stormwater Impacts

3.2.1.1. The permittee shall implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff. In the case of non-traditional MS4s (e.g., AHTD, universities, hospitals, prisons, military bases, and other government complexes), the permittee is only required to provide educational materials and outreach to the MS4 employees, on-site contractors, and individuals using the MS4's facilities.

3.2.1.2. *Decision process.* The permittee shall document the decision process for the development of a stormwater public education and outreach program. The rationale statement shall address both the overall public education program and the individual BMPs, measurable goals and responsible persons for the program. The rationale statement shall include the following information, at a minimum:

3.2.1.2.1. How the MS4 plans to inform individuals and households about the steps they can take to reduce stormwater pollution.
3.2.1.2.2. How the MS4 plans to inform individuals and groups on how to become involved in the stormwater program (with activities such as local stream and beach restoration activities);
3.2.1.2.3. Who are the target audiences for the MS4s education program who are likely to have significant stormwater impacts (including commercial, industrial and institutional entities) and why those target audiences were selected;
3.2.1.2.4. What are the target pollutant sources the MS4 public education program is designed to address;
3.2.1.2.5. What is the outreach strategy, including the mechanisms (e.g., printed brochures, newspapers, media, workshops, etc.) the MS4 will use to reach the target audiences, and how many people does the MS4 expect to reach by the outreach strategy over the permit term;
3.2.1.2.6. Who (person or department) is responsible for overall management and implementation of the stormwater public education and outreach program and, if different, who is responsible for each of the BMPs identified for this program;

3.2.1.2.7. How will the MS4 evaluate the success of this minimum measure, including how the measurable goals were selected for each BMP.

3.2.1.3. *Performance Standards.* The stormwater public education and outreach program shall include more than one mechanism and target at least five different stormwater themes or messages over the permit term. At a minimum, at least one theme or message shall be targeted to the land development community. For non-traditional MS4s, the land development community refers to landscaping and construction contractors working within its boundaries. The stormwater public education and outreach program shall reach at least 50 percent of the population over the permit term.

3.2.1.4. *Annual Reporting.* The annual report shall identify each mechanism used, including each stormwater theme, audience targeted and estimate of how many people were reached by each mechanism.

3.2.2. **Public Involvement/Participation**

3.2.2.1. The permittee shall at a minimum, comply with State and local public notice requirements when implementing a public involvement/participation program. In the case of non-traditional MS4s (e.g., AHTD, universities, hospitals, prisons, military bases, and other government complexes), the MS4 is required to involve employees, on-site contractors, and individuals using the MS4 facilities.

3.2.2.2. *Decision process.* The permittee shall document the decision process for the development of a stormwater public involvement/participation program. The rationale statement shall address the overall public involvement/participation program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement shall include the following information, at a minimum:

3.2.2.2.1. Has the permittee involved the public in the development and submittal of the NOI and SWMP description;
3.2.2.2.2. What is the MS4's plan to actively involve the public in the development and implementation of the program;
3.2.2.2.3. Who are the target audiences for the public involvement program, including a description of the types of ethnic and economic groups engaged. The MS4 is encouraged to actively involve all potentially affected stakeholder groups, including commercial and industrial businesses, trade associations, environmental groups, homeowners associations, and educational organizations, among others;
3.2.2.2.4. What are the types of public involvement activities included in the program? Where appropriate, consider the following types of public involvement activities: citizen representatives on a stormwater management panel, public hearings, working with citizen volunteers willing to educate others about the program, volunteer monitoring or stream/beach clean-up activities;
3.2.2.2.5. Who (person or department) is responsible for the overall management and implementation of the stormwater public involvement/participation program

and, if different, who is responsible for each of the BMPs identified for this program, and;

3.2.2.2.6. How the MS4 will evaluate the success of this minimum measure, including how the MS4 selected the measurable goals for each of the BMPs.

3.2.2.3. *Performance Standards*. The stormwater public involvement/participation program shall include at least five public involvement activities over the permit term.

3.2.2.4. *Annual Reporting*. The annual report shall identify each public involvement/participation activity conducted, including a brief description of activity and include an estimate of how many people participated.

### 3.2.3. Illicit Discharge Detection and Elimination

3.2.3.1. The permittee shall develop, implement and enforce a program to detect and eliminate illicit discharges, as defined in Part 6 of this permit, into the small MS4 (for illicit discharges to the MS4 via an adjacent, outside of the MS4's jurisdiction, interconnected MS4, the MS4 are only required to inform the neighboring MS4 and ADEQ in the annual report submission, of their existence);

3.2.3.2. New permittees shall develop a storm sewer system map, showing the location of all outfalls and the names and location of all surface waters of the State that receive discharges from those outfalls. Within five years of when the coverage under this general permit was granted, the storm sewer system map shall also include the entire MS4 system, including catch basins, pipes, ditches and public and private stormwater facilities. MS4s with urbanized area increases resulting from the 2010 census must update their storm sewer maps by the expiration of this permit;

3.2.3.3. The permittee shall to the extent allowable under State or local law, effectively prohibit, through ordinance or other regulatory mechanism, illicit discharges into the storm sewer system and implement appropriate enforcement procedures and actions;

3.2.3.4. The permittee shall develop and implement a plan to detect and eliminate non-stormwater discharges, including illegal dumping, to the system. See 3.2.3.6 for exceptions to this requirement.

3.2.3.5. The permittee shall inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste; and

3.2.3.6. The permittee shall address the following categories of non-stormwater discharges or flows (i.e., illicit discharges) only if the MS4 identifies them as significant contributors of pollutants to the small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), 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, dechlorinated swimming pool discharges, street wash water, and discharges or flows from emergency fire fighting activities (by definition, not an illicit discharge).

3.2.3.7. The permittee may also develop a list of other similar occasional incidental non-stormwater discharges (e.g., non-commercial or charity car washes, etc.) that will not be addressed as illicit discharges. These non-stormwater discharges must not be reasonably expected (based on information available to the permittees) to be significant sources of pollutants to the MS4, because of either the nature of the discharges or conditions the MS4 have established for allowing these discharges to the MS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to sensitive water bodies, BMPs on the wash water, etc.). The MS4 must document in the SWMP any local controls or conditions placed on the discharges. The MS4 must include a provision prohibiting any individual non-stormwater discharge that is determined to be contributing significant amounts of pollutants to the MS4.

3.2.3.8. *Decision process.* The permittee shall document the decision process for the development of a stormwater illicit discharge detection and elimination program. The rationale statement shall address both the overall illicit discharge detection and elimination program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement shall include the following information, at a minimum:

3.2.3.8.1. How the MS4 will develop a storm sewer map showing the location of all outfalls and the names and location of all receiving waters. Describe the sources of information was used for the maps, and the plan to verify the outfall locations with field surveys. If already completed, describe how the map was developed. Also, describe how the map will be regularly updated;

3.2.3.8.2. The mechanism (ordinance or other regulatory mechanism) the MS4 will use to effectively prohibit illicit discharges into the MS4 and why the MS4 chose that mechanism. If this mechanism needs to be developed, then describe in the plan and a schedule to do so. If an ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with the program;

3.2.3.8.3. The plan to ensure through appropriate enforcement procedures and actions that the illicit discharge ordinance (or other regulatory mechanism) is implemented;

3.2.3.8.4. The plan to detect and address illicit discharges to the MS4 system, including discharges from illegal dumping and spills. The plan shall include dry weather field screening for non-stormwater flows and ADEQ recommends field tests of selected chemical parameters as indicators of discharge sources. The description shall address the following, at a minimum:

3.2.3.8.4.1. Procedures for locating priority areas which include areas with higher likelihood of illicit connections (e.g., areas with older sanitary sewer lines, for example) or ambient sampling to locate impacted reaches;

3.2.3.8.4.2. Procedures for tracing the source of an illicit discharge, including the specific techniques that will used to detect the location of the source;
3.2.3.8.4.3. Procedures for removing the source of the illicit discharge; and
3.2.3.8.4.4. Procedures for program evaluation and assessment.

3.2.3.8.5. How the MS4 plans to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Include in the description how this plan will coordinate with the public education minimum measure and the pollution prevention/good housekeeping minimum measure programs;
3.2.3.8.6. Who is responsible for overall management and implementation of the stormwater illicit discharge detection and elimination program and, if different, who is responsible for each of the BMPs identified for this program, and;
3.2.3.8.7. How the MS4 will evaluate the success of this minimum measure, including how the MS4 selected the measurable goals for each of the BMPs.

3.2.3.9 *Performance Standards*. The stormwater illicit discharge detection and elimination program shall include dry-weather screening of all stormwater outfalls located in the MS4's urbanized area at the time of this permit coverage over the permit term. Only those outfalls draining undeveloped watersheds do not need to be screened for illicit discharges. The storm sewer system map shall be updated annually as needed for changes occurring in the urbanized area boundaries at the time of permit coverage.

3.2.3.10. *Annual Reporting.* The annual report shall document the following: (1)number of outfalls dry-weather screened, (2)number of dry-weather flows identified, (3)number of illicit discharges identified, (4)number of illicit discharges eliminated, (5)provide schedules for elimination of illicit connections that have been identified but have yet to be eliminated and (6)summary of any storm sewer system mapping updates.

3.2.4. **Construction Site Stormwater Runoff Control**

3.2.4.1. The permittee shall develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to the small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of pollutants in stormwater discharges from construction activity disturbing less than one acre shall be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If ADEQ waives requirements for stormwater discharges associated with small construction from a specific site(s), the permittee is not required to enforce the program to reduce pollutant discharges from such site(s). The program shall include the development and implementation of, at a minimum:

3.2.4.1.1. 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. The ordinance or other regulatory mechanism shall

be at least as stringent and not conflicting with the criteria set forth in the current, at time of issuance of this permit, ADEQ NPDES General Stormwater Permit for Construction Activities applicable for the permit area. This would include the statewide NPDES General Stormwater Permit for Construction Activities. If initially coverage was under a previous version of this permit then the ordinance or other regulatory mechanism, if needed, shall be revised within two years of coverage under this general permit was granted;

3.2.4.1.2. Requirements for construction site operators to implement appropriate erosion and sediment control BMPs;

3.2.4.1.3. Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;

3.2.4.1.4. Procedures for site plan review which incorporate consideration of potential water quality impacts;

3.2.4.1.5. Procedures for receipt and consideration of information submitted by the public; and

3.2.4.1.6. Procedures for site inspection and enforcement of control measures.

3.2.4.2. *Decision process.* The permittee shall document the decision process for the development of a construction site stormwater control program. The rationale statement shall address both the overall construction site stormwater control program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement shall include the following information, at a minimum:

3.2.4.2.1. The mechanism (ordinance or other regulatory mechanism) that will be used to require erosion and sediment controls at construction sites and why the MS4 chose that mechanism. If it is needed to develop this mechanism, describe the plan and a schedule to do so. If the ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with the SWMP description;

3.2.4.2.2. The plan to ensure compliance with the erosion and sediment control regulatory mechanism, including the sanctions and enforcement mechanisms that will be used to ensure compliance. Describe the procedures for when certain sanctions will be used. Possible sanctions include non-monetary penalties (such as a stop work orders), fines, bonding requirements, and/or permit denials for non-compliance;

3.2.4.2.3. The requirements for construction site operators to implement appropriate erosion and sediment control BMPs and control waste at construction sites that may cause adverse impacts to water quality. Such waste includes discarded building materials, concrete truck washouts, chemicals, litter, and sanitary waste;

3.2.4.2.4. The procedures for site plan review, including the review of pre-construction site plans, which incorporate consideration of potential water quality impacts. Describe the procedures and the rationale for how certain sites will be identified for site plan review, if not all plans are reviewed. Describe the

estimated number and percentage of sites that will have pre-construction site plans reviewed;

3.2.4.2.5. The procedures for receipt and consideration of information submitted by the public. Consider coordinating this requirement with the public education program;

3.2.4.2.6. The procedures for site inspection and enforcement of control measures, including how sites are prioritized for inspection;

3.2.4.2.7. Who is responsible for overall management and implementation of the construction site stormwater control program and, if different, who is responsible for each of the BMPs identified for this program; and

3.2.4.2.8. Describe how the MS4 will evaluate the success of this minimum measure, including how the measurable goals were selected for each of the BMPs.

3.2.4.3. *Performance Standards*. The construction site stormwater control program shall include pre-construction site plan reviews (reviews of construction site Stormwater Pollution Prevention Plans) of 100 percent of projects from construction activities that result in a land disturbance of greater than or equal to one acre. These applicable sites shall be inspected at least on a monthly basis to ensure compliance.

3.2.4.4. *Annual Reporting*. The annual report shall document the following: (1)number of applicable sites in the MS4's jurisdiction, (2)number of pre-construction site plan reviews performed, (3)number and frequency of site inspections, (4)number of violation letters issued, (5)number of enforcement actions taken and (6)number of complaints received and number followed up on.

3.2.5. **Post-Construction Stormwater Management in New Development and Redevelopment**

3.2.5.1. The permittee shall develop, implement, and enforce a program to address stormwater runoff 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 a small MS4. The program shall ensure that controls are in place that will prevent or minimize water quality impacts;

3.2.5.2. The permittee shall develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for the community;

3.2.5.3. The permittee shall 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. The ordinance or other regulatory mechanism shall be at least as stringent as the criteria set forth in the current, at time of issuance of this permit, ADEQ NPDES General Stormwater Permit for Construction Activities applicable for a permitted area. This would include the statewide NPDES General Stormwater Permit for Construction Activities. Of specific note is that a goal of at least 80% removal of total suspended solids from these flows which exceed predevelopment levels should be used in designing and installing

stormwater management controls (where practicable). If initially coverage was under a previous version of this permit, then the ordinance or other regulatory mechanism, if needed, shall be revised within two years of when coverage under this general permit was granted; and

3.2.5.4. The permittee shall ensure adequate long-term operation and maintenance of BMPs.

3.2.5.5. *Decision process.* The permittee shall document the decision process for the development of a post-construction SWMP. The rationale statement shall address both the overall post-construction SWMP and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement shall include the following information, at a minimum:

3.2.5.5.1. The program to address stormwater runoff from new development and redevelopment projects. Include in this description any specific priority areas for this program.

3.2.5.5.2. How the program will be specifically tailored for a local community, minimize water quality impacts, and attempt to maintain pre-development runoff conditions.

3.2.5.5.3. Any non-structural BMPs in the program, including, as appropriate: policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space (including a dedicated funding source for open space acquisition), provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; policies or ordinances that encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure; education programs for developers and the public about project designs that minimize water quality impacts; and other measures such as minimization of the percentage of impervious area after development, use of measures to minimize directly connected impervious areas, and source control measures often thought of as good housekeeping, preventive maintenance and spill prevention.

3.2.5.5.4. Any structural BMPs in the program, including, as appropriate: storage practices such as wet ponds and extended-detention outlet structures; filtration practices such as grassed swales, bio-retention cells, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches.

3.2.5.5.5. The mechanisms (ordinance or other regulatory mechanisms) used to address post-construction runoff from new developments and redevelopments and why they were chosen. If a mechanism needs to be developed, then describe a plan and a schedule to do so. If an ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with the program.

3.2.5.5.6. How the permittee will ensure the long-term operation and maintenance (O&M) of the selected BMPs. Options to help ensure that future O&M responsibilities are clearly identified include an agreement between the

permittee and another party such as the post-development landowners or regional authorities.

3.2.5.5.7. Who is responsible for overall management and implementation of the post-construction SWMP and, if different, who is responsible for each of the BMPs identified for this program.

3.2.5.5.8. How the MS4 will evaluate the success of this minimum measure, including how the MS4 selected the measurable goals for each of the BMPs.

3.2.5.6. *Performance Standards*. The post-construction SWMP shall include pre-construction site plan review (for compliance with local requirements for post-construction management of stormwater) of 100 percent of projects from construction activities that result in a land disturbance of greater than or equal to one acre to ensure that required controls are designed per requirements. These applicable sites shall be inspected to ensure that controls are installed per requirements. The program shall also ensure that long-term operation and maintenance (O&M) plans are developed and agreements in place for all applicable sites.

3.2.5.7. *Annual Reporting*. The MS4 annual reports shall document the following: (1)number of applicable sites in the jurisdiction requiring post-construction controls, (2)number of pre-construction site plan reviews performed, (3)number of inspections performed to ensure as built per requirements, (4) compliance rates with MS4 requirements, and (5)number of long-term operation and maintenance (O&M) plans developed and agreements in place.

3.2.5.8. *Low Impact Development*. ADEQ recommends that MS4s evaluate their existing codes and planning procedures to remove impediments to low impact development and green infrastructure. ADEQ also encourages municipalities to evaluate proposed developments using green infrastructure for waivers from local requirements in their community planning process. You must include information on efforts to identify and remove impediments to LID in the post-construction program element of the Annual Report covering the 4th year of the permit.

3.2.6. **Pollution Prevention/Good Housekeeping for Municipal Operations**

3.2.6.1. The permittee shall 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; and

3.2.6.2. Using training materials that are available from EPA, ADEQ, other organizations or developed in-house, the program shall include employee training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance; and

The permittee shall include a list of industrial facilities owned or operated by the MS4 that are subject to ADEQ's Industrial Stormwater General Permit or individual

NPDES permits for discharges of stormwater associated with industrial activity that ultimately discharge to the MS4. Include the ADEQ permit number or a copy of the NOC for each facility.

3.2.6.3. *Decision process.* The permittee shall document the decision process for the development of a pollution prevention/good housekeeping program for municipal operations. The rationale statement shall address both the overall pollution prevention/good housekeeping program and the individual BMPs, measurable goals, and responsible persons for the program. The rationale statement shall include the following information, at a minimum:

3.2.6.3.1. The operation and maintenance program to prevent or reduce pollutant runoff from the municipal operations. The program shall specifically list the municipal operations that are impacted by this operation and maintenance program.

3.2.6.3.2. Any government employee training program that will be used to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. Describe any existing, available materials planned for use. Describe how this training program will be coordinated with the outreach programs developed for the public information minimum measure and the illicit discharge minimum measure.

3.2.6.3.3. The program description shall specifically address the following areas:

3.2.6.3.3.1. Maintenance activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to the MS4.

3.2.6.3.3.2. Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, waste transfer stations, fleet or maintenance shops with outdoor storage areas, and salt/sand storage locations and snow disposal areas the permittee operates.

3.2.6.3.3.3. Procedures for the proper disposal of waste removed from the MS4 and the municipal operations, including dredge spoil, accumulated sediments, floatables, and other debris.

3.2.6.3.3.4. Procedures to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices.

3.2.6.3.4. Who is responsible for overall management and implementation of the pollution prevention/good housekeeping program and, if different, who is responsible for each of the BMPs identified for this program.

3.2.6.3.5. How will the MS4 evaluate the success of this minimum measure, including how the MS4 selected the measurable goals for each of the BMPs.

3.2.6.4. *Performance Standards*. The pollution prevention/good housekeeping program shall include, at a minimum, an annual employee training for all eligible employees. An eligible employee is a new or veteran employee whose day-to-day work activities have the potential to impact stormwater quality. MS4s shall evaluate all current municipal-owned facilities to ensure that industrial general stormwater permit coverage (ARR000000), if needed, is obtained. This evaluation shall be included in the first annual report. Annual inspections for all municipal facilities not requiring industrial stormwater permit coverage are required for municipal facilities performing maintenance activities on mechanical equipment, facilities with fueling stations, facilities involved in waste storage, transfer or recycling, facilities with material stockpiles, and facilities storing fertilizers or pesticides. The operation and maintenance program shall include appropriate procedures, controls, maintenance schedules and recordkeeping to address Part 3.2.6.3.3 of this permit.

3.2.6.5. *Annual Reporting*. The annual reports shall document the following: (1) summary of employee training program(s) implemented with number of employees that attended and (2) summary of activities and procedures implemented for the operation and maintenance program.

### 3.3. Sharing Responsibility

Implementation of one or more of the minimum measures may be shared with another entity, or the entity may fully take over the measure. The permittee may rely on another entity only if:

3.3.1. The other entity, in fact, implements all or part of the control measure;

3.3.2. The particular control measure, or component of that measure, is at least as stringent as the corresponding permit requirement; and

3.3.3. The other entity agrees to implement the control measure on their behalf. There shall be written acceptance of this obligation. This obligation shall be maintained as part of their SWMP. If the other entity agrees to report on the minimum measure, shall supply the other entity with the reporting requirements contained in Part 4.3 of this permit. If the other entity fails to implement the control measure on their behalf, then remain liable for any discharges due to that failure to implement.

### 3.4. Reviewing and Updating Stormwater Management Programs

3.4.1. *SWMP Review:* The permittee shall do an annual review of the SWMP in conjunction with preparation of the annual report required under Part 4.3 of this permit.

3.4.2. *SWMP Update:* The permittee may change the SWMP during the life of the permit in accordance with the following procedures:

3.4.2.1. Changes adding (but not subtracting or replacing) components, controls, or requirements to the SWMP may be made at any time upon written notification to ADEQ. This includes any changes that affect the signatory authority of the permit.

3.4.2.2. Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternate BMP may be requested at any time. Unless denied by ADEQ, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, ADEQ will send a written response giving a reason for the decision. The modification requests shall include the following:

3.4.2.2.1. An analysis of why the BMP is ineffective or infeasible (including cost prohibitive),
3.4.2.2.2. Expectations on the effectiveness of the replacement BMP, and
3.4.2.2.3. An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

3.4.2.3. Change requests or notifications shall be made in writing and signed in accordance with Part 5.7 of this permit.

3.4.3. *SWMP Updates Required by ADEQ*: ADEQ may require changes to the SWMP as needed to:

3.4.3.1. Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4;

3.4.3.2. Include more stringent requirements necessary to comply with new Federal statutory or regulatory requirements; or

3.4.3.3. Include such other conditions deemed necessary by ADEQ to comply with the goals the Clean Water Act.

3.4.3.4. Changes requested by ADEQ will be made in writing, set forth the time schedule to develop the changes, and offer the opportunity to propose alternative program changes to meet the objective of the requested modification.

3.4.4. *Transfer of Ownership, Operational Authority, or Responsibility for SWMP Implementation:* The permittee shall implement the SWMP on all new areas added to a portion of the MS4 (or for which become responsible for implementation of stormwater quality controls) as expeditiously as practicable, but not later than one year from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately.

3.4.4.1. Within 30 days of a transfer of ownership, operational authority, or responsibility for SWMP implementation, shall have a plan for implementing a SWMP on all affected areas. The plan may include schedules for implementation. Information on all new

annexed areas and any resulting updates required to the SWMP shall be included in the annual report. ADEQ must be notified of permit transfer within 30 days of change of ownership, operational authority or responsibility for SWMP implementation.

3.4.4.2. Only those portions of the SWMPs specifically required as permit conditions shall be subject to modification. Addition of components, controls, or requirements by the permittee(s) and replacement of an ineffective or infeasible BMP implementing a required component of the SWMP with an alternate BMP expected to achieve the goals of the original BMP shall be considered minor changes to the SWMP and not modifications to the permit.

### 3.4.5 Discharges to Impaired Waters with and without approved TMDLs

Impaired waters are those that have been identified pursuant to Section 303(d) of the Clean Water Act as not meeting applicable surface water quality standards. This may include both waters with approved Total Maximum Daily Loads (TMDLs) and those for which a TMDL has not yet been approved.

a. Discharges of pollutant(s) of concern to impaired water bodies for which there is an approved total maximum daily load (TMDL) are not eligible for this general permit unless they are consistent with the approved TMDL. A water body is considered impaired for the purposes of this permit if it has been identified, pursuant to the latest approved CWA 303(d) list.

b. The permittee shall control the discharges of pollutant(s) of concern to impaired waters and waters with approved TMDLs as provided below, and shall assess the success in controlling those pollutants.

3.4.5.1. Discharges to Water Quality Impaired Water Bodies with an Approved TMDL

If the permittee discharges to an impaired water body with an approved TMDL, the permittee must comply with the WLA in the final permit in accordance with 40 CFR 122.44(d)(1)(vii)(1)(B) and will have three years to comply with the TMDL in accordance with Reg. 2.104. However, until the effective date of the WLA, the permittee shall control the discharges of pollutant(s) of concern to impaired waters and waters with approved TMDLs and shall assess the success in controlling those pollutants.

3.4.5.2 Discharges Directly to Water Quality Impaired Water Bodies without an Approved TMDL (see Part 1.3.4)

3.4.5.2.1. Where the impairment is for a nutrient constituent (e.g, nitrogen or phosphorus), you must, at a minimum:

3.4.5.2.1.1. Within 1 year of the date of permit issuance, identify potential significant sources of the pollutant of concern entering your MS4.

3.4.5.2.1.2. Within 2 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a public education program to reduce the discharge of the pollutant of concern in municipal storm water contributed by residential and commercial use of fertilizers.

3.4.5.2.1.3. Within 2 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by fertilizer use at municipal operations (e.g., parks, roadways, municipal facilities).

3.4.5.2.1.4. Within 2 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by municipal and private golf courses within your jurisdiction.

3.4.5.2.1.5. Within 3 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by any other significant source identified in the source identification evaluation.

3.4.5.2.1.6. Include in your annual reports progress on program implementation and reducing the nutrient pollutant of concern and updates to measurable goals for nutrient reduction program elements.

3.4.5.2.2. Where the impairment is for bacteria, you must, at a minimum:

3.4.5.2.2.1. Within 1 year of the date of permit issuance, identify potential significant sources bacteria entering your MS4.

3.4.5.2.2.2. Within 2 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a public education program to reduce the discharge of bacteria in municipal storm water contributed (if applicable) by pets, recreational and exhibition livestock, and zoos.

3.4.5.2.2.3. Within 2 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a program to reduce the discharge of the bacteria in municipal storm water contributed by areas within your MS4 served by on-site wastewater treatment systems.

3.4.5.2.2.4. Within 2 years of the date of permit issuance, review results to date from your Illicit Discharge Detection and Elimination program and modify as necessary to prioritize the detection and elimination of discharges contributing bacteria to the MS4.

3.4.5.2.2.5. Within 3 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a program to reduce the discharge of the pollutant of concern in municipal storm water contributed by any other significant source identified in the source identification evaluation.

3.4.5.2.2.6. Include in your annual reports progress on program implementation and reducing the nutrient pollutant of concern and updates to measurable goals for bacteria reduction program elements.

3.4.5.2.3. Where the impairment is for any pollutant other than nutrients or bacteria, you must, at a minimum:

3.4.5.2.3.1. Within 1 year of the date of permit issuance, identify potential significant sources of the pollutant of concern entering your MS4.

3.4.5.2.3.2. Within 3 years of the date of permit issuance, develop (or modify an existing program as necessary) and implement a program(s) to reduce the discharge of the pollutant of concern in municipal storm water contributed by any significant source identified in the source identification evaluation.

3.4.5.2.3.3. Include in your annual reports progress on program implementation and reducing the nutrient pollutant of concern and updates to measurable goals for the pollutant of concern reduction program elements.

**3.5. Monitoring.**

3.5.1 *Discharges into waters identified on the 303(d) list.* The permittee must evaluate program compliance, the appropriateness of identified best management practices, and progress toward achieving identified measurable goals. If the permittee discharges to waters for which a TMDL and implementation plan has been established, then the permittee must monitor to determine if the stormwater controls are adequate to maintain compliance with the MS4's wasteload allocation. The monitoring program should be designed to assess the effectiveness of the permittee's stormwater management program, assess the impacts to receiving waters resulting from stormwater discharges, identify sources of elevated pollutant loads and specific pollutants, and detect and eliminate illicit discharges and illegal connections to the MS4.

This monitoring must include quarterly grab samples for the pollutant(s) listed in the TMDL. The permittee must sample at the outfalls as required in the TMDL report. The sampling must occur on a quarterly basis.
If the permittee is not assigned a wasteload allocation in the approved TMDL, no monitoring for the pollutant(s) of concern is required.

For MS4s discharging into 303(d) listed streams with an impairment identified as caused by stormwater, monitoring must include quarterly grab samples for the pollutant(s) listed in the 303(d) listing. The MS4 must develop a sampling plan which, over time, will help to identify those outfalls responsible for the discharge of the pollutant(s). The initial outfall(s) to be sampled shall be representative of the varying land uses of the city. Based upon initial results of sampling, the MS4 may revise its sampling plan as appropriate. The initial sampling plan must be submitted to ADEQ for review. All sampling results must be submitted with the MS4's annual report.

3.5.2. *Analytical Methods.* Analysis and collection of samples should be done in accordance with the methods specified at 40 CFR §136. Where an approved 40 CFR §136 method does not exist, any available method may be used unless a particular method or criteria for method selection (such as sensitivity) has been specified in the permit. Screening level tests may utilize less expensive "field test kits" using test methods not approved by EPA under 40 CFR 136, provided the manufacturers published detection ranges are adequate for the illicit discharge detection purposes.

## PART 4. EVALUATING, RECORD KEEPING AND REPORTING

### 4.1. Evaluating

The permittee shall evaluate program compliance, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals and satisfying performance standards.

### 4.2. Recordkeeping.

4.2.1. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or other recordings for continuous monitoring instrumentation, copies of all reports required by this permit, a copy of the NPDES permit, and records of all data used to complete the application (NOI) for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application, or for the term of this permit, whichever is longer. This period may be extended by request of the permitting authority at any time.

4.2.2. The permittee shall submit any records to the permitting authority upon request. The permittee must retain a description of the SWMP required by this permit (including a copy of the permit language) at a location accessible to the permitting authority. The permittee must make all records, including the notice of intent (NOI) and the description of the SWMP, available to the public if requested in writing.

### 4.3. Reporting.

4.3.1. New permittees must submit annual reports to ADEQ for each year of the permit term. The first report is due fifteen (15) months from the effective date of the permit, covering the activities of the permittee during the twelve (12) month period beginning on the effective date of the permit for the permittee. Subsequent annual reports are due on the same date for each of the following years during the remainder of the permit term (and continuing into any administrative continuance of the permit, should it not be reissued prior to expiration). Prior to submitting annual reports to ADEQ, MS4s must make a good faith effort to allow their citizens an opportunity for involvement and input. MS4s shall include a copy of the annual report in electronic format on their websites and at local centers of information, i.e. public libraries, city halls, county courthouses, community centers, etc. Existing permittees must submit their annual reports no later than June 1$^{st}$ of the following year (i.e. 2014 report would be due no later than June 1, 2015). Annual reports will be publicly available on ADEQ's website. The report must include:

4.3.1.1. The status of compliance with permit conditions, an assessment of the appropriateness of the identified best management practices, and the progress towards achieving the measurable goals for each of the minimum control measures;

4.3.1.2. Results of information collected and analyzed, if any, during the reporting period, including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the maximum extent practicable;

4.3.1.3. A summary of the stormwater activities the permittee plans to undertake during the next reporting cycle (including an implementation schedule);

4.3.1.4. Proposed changes to the stormwater management program, including changes to any BMPs or any identified measurable goals that apply to the program elements;

4.3.1.5. Description and schedule for implementation of additional BMPs that may be necessary, based on monitoring results, to ensure compliance with applicable TMDLs and implementation plans; and

4.3.1.6. Notice that the permittee is relying on another government entity to satisfy some of the permit obligations (if applicable).

4.3.1.7. Reports must be submitted with the appropriate ADEQ reporting forms.

4.3.2. Where to Submit. Annual reports shall be submitted to ADEQ at the following address:

ADEQ
Water Division, General Permits
5301 Northshore Drive
North Little Rock, AR 72118

Alternatively, you may submit the required documents in electronic format (.pdf) at the following email address: Water-permit-application@adeq.state.ar.us

## PART 5. GENERAL CONDITIONS

**5.1. Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Federal Clean Water Act and the Arkansas Water and Air Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

**5.2. Continuation of the Expired General Permit.** An expired general permit continues in force and effect until a renewal general permit is issued. If this permit is not re-issued or replaced prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedure Act and remain in force and effect. If were granted permit coverage prior to the expiration date, will automatically remain covered by the continued permit until the earliest of:

5.2.1. Re-issuance or replacement of this permit, at which time must comply with the conditions of the new permit and submit a renewal NOI no later than the effective date of the re-issued permit to maintain authorization to discharge; or

5.2.2. Submittal of a Notice of Termination; or

5.2.3. Issuance of an individual permit for the project's discharges; or

5.2.4. A formal permit decision by the ADEQ to not re-issue this general permit, at which time must seek coverage under an individual permit.

**5.3. Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

**5.4. Duty to Mitigate.** The permittee must take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

**5.5. Duty to Provide Information.** The permittee must furnish to the permitting authority any information that is requested to determine compliance with this permit or other information

**5.6. Other Information.** If the permittee becomes aware that the permittee has failed to submit any relevant facts in the Notice of Intent or submitted incorrect information in the Notice of Intent or in any other report to the permitting authority, the permittee must promptly submit such facts or information.

**5.7. Signatory Requirements.** All Notices of Intent, Notices of Termination, reports, certifications, or information submitted to the permitting authority, or that this permit requires be maintained by the permittee shall be signed and certified as follows:

5.7.1. All Notices of Intent must be signed and certified as follows:

5.7.1.1. For a corporation: By a responsible corporate officer. For the purpose of this Part, a responsible corporate officer means:

5.7.1.1.1. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or

5.7.1.1.2. The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

5.7.1.2. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

5.7.1.3. For a Municipality, County, State, Federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a Federal agency includes

5.7.1.3.1. The chief executive officer of the agency, or

5.7.1.3.2. A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

5.7.2. All NOT's, SWMP's, reports, certifications, or other information required by this permit must be signed by a person described in Part 5.7.1 above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

5.7.2.1. The authorization is made in writing by a person described in Part 5.7.1;

5.7.2.2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

5.7.2.3. The signed and dated written authorization is included in the SWMP. A copy must be submitted to ADEQ, if requested.

5.7.3. Changes to Authorization. If an authorization is no longer accurate because a different operator has the responsibility for the overall operation of the MS4, a new authorization

by ADEQ under this paragraph, then the applicability of this permit to is automatically terminated at the end of the day specified by ADEQ for application submittal.

5.17.2 *Request by permittee.* Any discharger authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual NPDES permit with reasons supporting the request. The request may be granted by issuance of any individual permit or an alternative general permit if the reasons cited by are adequate to support the request.

5.17.3 *General permit termination.* When an individual NPDES permit is issued to a discharger otherwise subject to this permit, or are authorized to discharge under an alternative NPDES general permit, the applicability of this permit to the MS4 is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an operator otherwise subject to this permit, or the operator is denied for coverage under an alternative NPDES general permit, the applicability of this permit to the MS4 is automatically terminated on the date of such denial, unless otherwise specified by ADEQ.

**5.18 Re-opener Clause.** In accordance with 40 CFR Part 122.62(a)(2), the permit may be modified, or alternatively, revoked and reissued, if new information is received that was not available at the time of permit issuance that would have justified the application of different permit conditions at the time of permit issuance.

## PART 6. DEFINITIONS

All definitions contained in Section 502 of the Act and 40 CFR 122 shall apply to this permit and are incorporated herein by reference. For convenience, simplified explanations of some regulatory/statutory definitions have been provided, but in the event of a conflict, the definition found in the Statute or Regulation takes precedence.

6.1. **"Best Management Practices (BMPs)"** means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

6.2. **"Control Measure"** as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the United States.

6.3. **"CWA"** means the Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq.

6.4. **"Director"** means the Director, Arkansas Department of Environmental Quality, or a designated representative.

6.5. **"Discharge"** when used without qualification means the "discharge of a pollutant."

6.6. **"Discharge of Stormwater Associated with Construction Activity"** as used in this permit, refers to a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located.

6.7. **"Discharge-related activities"** include: activities which cause, contribute to, or result in stormwater point source pollutant discharges; and measures to control stormwater discharges, including the siting, construction and operation of best management practices (BMPs) to control, reduce or prevent stormwater pollution.

6.8. **"Eligible"** means qualified for authorization to discharge stormwater under this general permit.

6.9. **"Facility" or "Activity"** means any NPDES "point source" or any other facility (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

6.10. **"Illicit Connection"** means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

6.11. **"Illicit discharge"** means any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from emergency fire fighting activities.

6.12. **"Large Municipal Separate Storm Sewer System"** means all municipal separate storm sewer systems that are either:

6.12.1. Located in an incorporated place with a population of 250,000 or more as determined by the latest Decennial Census by the Bureau of Census: or

6.12.2. Located in the counties with unincorporated urbanized populations of 250,000 or more, except municipal, separate storm sewers that are located in the incorporated places, townships or towns within such counties; or

6.12.3. Owned or operated by a municipality other than those described in paragraphs 6.12.1 or

6.12.2 and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

6.13. "**MEP**" means Maximum Extent Practicable, the technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in stormwater discharges. A discussion of MEP as it applies to small MS4s is found at 40 CFR 122.34. CWA section 402(p)(3)(B)(iii) requires that a municipal permit "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system design, and engineering methods, and other provisions such as the Administrator or the State determines appropriate for the control of such pollutants."

6.14. "**Measurable Goal**" means a quantitative measure of progress in implementing a component of a stormwater management program.

6.15. "**Medium Municipal Separate Storm Sewer System**" means all municipal separate storm sewer systems that are either:

6.15.1. Located in an incorporated place with a population of more than100,000 but less than 250,000 as determined by the latest Decennial Census by the Bureau of Census: or

6.15.2. Located in the counties with unincorporated urbanized populations of more than 100,000 but less than 250,000, except municipal, separate storm sewers that are located in the incorporated places, townships or towns within such counties; or

6.15.3. Owned or operated by a municipality other than those described in paragraphs 6.15.1 or 6.15.2 and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

6.16. "**MS4**" means Municipal Separate Storm Sewer System.

6.17. "**Municipal Separate Storm Sewer**" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, and storm drains):

6.17.1. Owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the Clean Water Act (33 U.S.C. 1288) that discharges to waters of the United States;

6.17.2. Designed or used for collecting or conveying stormwater;

6.17.3. That is not a combined sewer; and

6.17.4. That is not part of a publicly owned treatment works.

6.18. "**NOI**" means Notice of Intent to be covered by this permit.

6.19. "**NOT**" means Notice of Termination.

6.20. "**Non-Traditional MS4**" means systems similar to separate storm sewer systems in municipalities, such as systems at military bases, hospitals, public universities or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewer systems in very discrete areas such as individual buildings.

6.21. "**Off-Lot Home Sewage Treatment System (HSTS)**" means a system designed to treat home sewage on-site and discharges treated wastewater off-lot.

6.22. "**On-Lot Home Sewage Treatment System (HSTS)**" means a system designed to treat home sewage on-lot with no discharges leaving the lot.

6.23. "**Outfall**" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and that are used to convey waters of the United States.

6.24. "**Owner or operator**" means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.

6.25. "**Permitting Authority**" means the Arkansas Department of Environmental Quality.

6.26. "**Physically Interconnected**" means that one municipal separate storm sewer system is connected to a second municipal separate storm sewer system in such a way that it allows for direct discharges into the second system.

6.27. "**Point Source**" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

6.28. "**Pollutant**" is defined at 40 CFR 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

6.29. "**Qualified personnel**" staff knowledgeable in the operation and maintenance of Municipal Separate Storm Sewer Systems (MS4) possessing the skills necessary to gather and evaluate information regarding an MS4 program.

6.30. "**Significant contributors of pollutants**" means any discharge that causes or could cause or contribute to a violation of surface water quality standards.

6.31. **"Small MS4"** means any MS4 not already covered by the Phase I stormwater program.

satisfying the requirement of Part 5.7.1 above must be completed prior to or together with any reports, information, or notices of intent to be signed by an authorized representative.

5.7.4. Any person signing documents under the terms of this permit shall make the following certification:

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

5.7.5. Falsification.

Arkansas law imposes penalties and fines for persons who knowingly make false statements or knowingly swear or affirm the truth of a false statement previously made.

**5.8. Local, State, and Federal Laws.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable local, state, or federal law or regulation.

**5.9. Property Rights.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privilege, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

**5.10. Proper Operation and Maintenance.** The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used to achieve compliance with the conditions of this permit and with the conditions of the permittee's stormwater management program. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed only when the operation is necessary to achieve compliance with the conditions of the permit.

**5.11. Inspection and Entry.** The permittee shall allow ADEQ or an authorized representative upon the presentation of credentials and other documents as may be required by law, to do any of the following:

5.11.1. Enter the premises at reasonable times where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

5.11.2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit;

5.11.3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment) practices, or operations regulated or required under this permit; and

5.11.4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

**5.12. Permit Actions.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**5.13. Anticipated Noncompliance.** The permittee shall give advance notice to ADEQ of any planned changes in the permitted small MS4 or activity which may result in noncompliance with this permit.

**5.14. State Environmental Laws.** Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.

No condition of this permit releases the permittee from any responsibility or requirements under other environmental statutes or regulations.

**5.15. Severability.** The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

**5.16. Procedures for Modification or Revocation.** Permit modification or revocation will be conducted according to 40 CFR 122.62, 122.63, 122.64 and 124.5.

**5.17. Requiring an Individual Permit or an Alternative General Permit**

5.17.1 *Request by permitting authority.* ADEQ may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or coverage under an alternative NPDES general permit. Any interested person may petition ADEQ to take action under this paragraph. Where ADEQ requires to apply for an individual NPDES permit or coverage under an alternative NPDES general permit, ADEQ will notify in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for to file the application, and a statement that on the effective date of issuance or denial of the individual NPDES permit or the alternative NPDES general permit coverage as it applies to the individual permittee, coverage under this general permit shall automatically terminate. ADEQ may grant additional time to submit the application upon request of the applicant. If fail to submit in a timely manner an individual NPDES permit application or an NOI for coverage under an alternative NPDES general permit as required