



Stormwater Management Plan

**Municipal Separate Storm Sewer System (MS4)
Storm Water Program**

City of Jonesboro ▪ Engineering Department

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TABLE OF CONTENTS

1.0 Introduction

2.0 Public Education and Outreach

2.1 Brochures

2.2 Website Information

2.3 Youth Public Education and Outreach

2.4 Land Development Education and Outreach

3.0 Public Involvement/Participation

3.1 Storm Water Website & Hotline

3.2 Ad hoc Citizen Involvement

3.3 Storm Drain Stenciling

3.4 Public Stormwater Meeting

4.0 Illicit Discharge Detection and Elimination

4.1 Illicit Discharge Detection and Elimination

4.2 Storm Drain System Mapping

4.3 GIS Database of Outfalls and Surface Streams

4.4 Non-Stormwater Discharges and Illegal Dumping

5.0 Construction Site Stormwater Runoff Control

5.1 Storm Drainage Design Manual

5.2 Site Planning/Training

5.3 Inspections

6.0 Post-Construction Stormwater Management in New Development and Redevelopment

6.1 BMP Manual

6.2 Long-term Operation and Maintenance of Stormwater Management Facilities

6.3 Inspections

7.0 Pollution Prevention/Good Housekeeping for Municipal Operations

7.1 Maintenance Program and Procedures Assessment

7.2 PHF Application and Storage

7.3 Municipal Outdoor Operations

8.0 Appendices

8.1 Appendix A – Community Contacts

1.0 Introduction

This Storm Water Management Plan (SWMP) is required under the U.S. Environmental Protection Agency (EPA) Phase II storm water regulations, promulgated under the federal Clean Water Act. These regulations require the City of Jonesboro to obtain permit authorization to discharge stormwater under the National Pollutant Discharge Elimination System (NPDES). The permit covers storm water discharges associated with the City of Jonesboro Municipal Separate Storm Sewer System (MS4) and requires the City of Jonesboro to develop a SWMP and report annually on the progress.

In 1990, the EPA promulgated rules establishing Phase I of the NPDES stormwater program. The Phase I program for MS4s requires operators of “medium” and “large” MS4s, those that generally serve populations of 100,000 or greater, to implement a storm water management program as a means to control polluted discharges from the MS4. The Storm Water Phase II Rule extended the coverage of the NPDES storm water program to “small” MS4s and addresses storm water discharges from areas located within the boundaries of an urbanized area serving a population of 100,000 people or less. The City of Jonesboro is presently designated as a “small MS4”.

Polluted storm water runoff is often transported to MS4s and ultimately discharged into local rivers and streams without treatment. EPA’s Storm Water Phase II Rule establishes an MS4 SWMP that is intended to improve the Nation’s waterways by reducing the quantity of pollutants that stormwater picks up and carries into storm sewer systems during storm events.

Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

The Arkansas Department of Environmental Quality (ADEQ), in accordance with the provisions of the Arkansas Water and Air Pollution Control Act and the Clean Water Act, regulate small MS4s located within the State of Arkansas. ADEQ authorizes discharges to receiving waters of the United States under a National Pollutant Discharge Elimination System (NPDES) permit number ARR040000. This permit authorizes the owner or operator of a small MS4 to submit a Notice of Intent (NOI) and a SWMP that describes how the regulated entity will identify and implement a range of “Best Management Practices,” to control pollutants and ensure proper surface water quality standards. This plan must address six elements, “Minimum Control Measures,” that are intended to reduce pollutants from entering and being discharged within the MS4.

The following is a synopsis of the Six Minimum Control Measures and what is required to be addressed in the SWMP.

1. Public Education and Outreach

- Implement a public education program to distribute educational materials (i.e., flyers placed in the Municipal water bill envelope) to the community or conduct equivalent outreach activities about the impact of stormwater discharges on waterbodies and the steps that the public can take to reduce pollutants in storm water runoff.

2. Public Involvement/Participation

- Comply with State and local public notice requirements when implementing a public involvement/participation program.

3. Illicit Discharge Detection and Elimination

- Develop, implement and enforce a program to detect and eliminate illicit discharges into the small MS4 and notify the ADEQ of any illicit discharges that may result from exceeding applicable water quality standards.
- Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls.
- To the extent allowable under State or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into the storm sewer system and implement appropriate enforcement procedures and actions.
- Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the system.
- Inform public employees, businesses, and the general public of hazards associated with illegal connections and illicit discharges and improper disposal of waste.

4. Construction Site Storm Water Runoff Control

- Develop and implement a program to reduce pollutants in any storm water runoff to the small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. The extent to which the program will rely upon the NPDES Phase II Construction regulation should be specified.

5. Post-Construction Storm Water Management in New Development & Redevelopment

- 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 your small MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts.
- Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for your community;

- Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law; and
- Ensure adequate long-term operation and maintenance of BMPs.

6. Pollution Prevention/Good Housekeeping - Municipal Operations

- 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 MS4 operations; and
- Using training materials that are available from EPA, ADEQ, or other organizations, the program must include employee training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction or land disturbances, and storm water system maintenance.

2.0 Public Education and Outreach

The City of Jonesboro will implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impact of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff. Each BMP implemented is described below.

2.1 Brochures

2.1.1 General Description

The City will distribute informational brochures that will target audiences such as pet owners, agricultural operations, construction operations, professional landscaping, automotive repair facilities, and household hazardous waste disposal, etc. All brochures will be distributed at special events, by mail, through enforcement activities, and by request.

2.1.2 BMP Goals and Objectives

To educate and inform the public of the City's Stormwater Management Program and ways to prevent storm water pollution. The City will compile the number of brochures distributed and try to reach 20% of the permit area population each year.

2.2 Website Information

2.2.1 General Description

The City of Jonesboro will maintain a website with information specifically of the city's MS4 program and related Stormwater Management programs and issues.

2.2.2 BMP Goals and Objectives

To inform the public of the city's MS4 Permit Program, MS4 Program Plan, and Annual report. The website will also solicit public involvement and participation. The primary goal is to describe the programs established to meet the six minimum control measures.

2.3 Youth Public Education and Outreach

2.3.1 General Description

This program will be coordinated with local schools and its focus is to educate students on water pollution, its causes, and prevention. The materials used will be slide presentations, movies, and/or an EnviroScape Watershed/Nonpoint source Model which graphically demonstrates stormwater runoff patterns. As funds permit, we will distribute promotional materials such as pencils, erasers, rulers, and book makers, bearing anti-pollution messages.

2.3.2 BMP Goals and Objectives

To educate students on the many sources of water pollution and how the effect water quality and the environment. Best management practices will also be demonstrated to show the steps that can be taken to help prevent environmental contamination. At least two elementary schools within the city limits will be visited yearly.

2.4 Land Development Education and Outreach

2.4.1 General Description

This program will be targeted toward developers and builders to engage their interest in Best Management Practices and a working knowledge of stormwater management. Education will be implemented through the use of slide presentations, videos, handouts, or other information, as well as, updates on new policies or changes, as appropriate.

2.4.2 BMP Goals and Objectives

To provide the land development industry and related fields with information on federal, state, and local requirements on land development activities that impact stormwater runoff. At least two presentations and one informal meeting will be held and/or given to the Northeast Arkansas Homebuilders Association, local professional engineers, contractors, and other related people working in the construction industry.

Information gathered from each of the above activities will be reviewed and summarized in the city's annual report. Implementation of existing BMPs will be fine tuned as needed and measurable goals will be adjusted as appropriate and the basis of any changes will be reported in the next annual report.

3.0 Public Involvement and Participation

Public involvement and participation play a major role in achieving and implementing goals of a community's SWMP. Community education and involvement allows for broader public support, since citizens who participate in the development of the SWMP are partners in the program and therefore, may be less likely to raise legal challenges and be more likely to take an active role in its implementation. It also allows for a broader base of expertise and economic benefit, since the community can be a valuable and free, intellectual resource. In addition, it provides a conduit to other programs as citizens involved in the stormwater program development process provide important cross-connections and relationships with other community and government programs. Outlined below are the city's BMPs for Public Involvement and Participation.

3.1 Storm Water Website & Hotline

3.1.1 General Description

The City of Jonesboro will maintain an interactive website that will provide users the ability to see active grading permits as well as notify city staff of any stormwater related issues at any address or parcel of land within the city limits. Also, the Engineering Department maintains a dedicated telephone hotline that allows the public to address any complaints and/or concerns pertaining to stormwater management.

3.1.2 BMP Goals and Objectives

To allow the public to report non-emergency pollution issues and to allow developers to submit information on any intended land disturbance activities.

3.2 Ad hoc Citizen Involvement

3.2.1 General Description

The City of Jonesboro will encourage youth groups, neighborhood associations, local environmental groups, and individuals to identify, organize, monitor, meet, report and conduct special trash cleanup projects or other related activities that will protect or cleanup stormwater pollution. In addition, the city will host public meetings to allow citizens to discuss various viewpoints and provide input concerning appropriate storm water management policies and BMPs.

3.2.2 BMP Goals and Objectives

To coordinate and share information and resources that will cleanup and prevent stormwater pollution.

3.3 Storm Drain Stenciling

3.3.1 General Description

The City will coordinate a storm drain marking program and will provide paint, stencils, maps, directions, and leadership for the marking of the city's storm drains. The painted message "No Dumping, Drains to Creek" will be utilized for this measure.

3.3.2 BMP Goals and Objectives

To encourage participation in preventing stormwater pollution. A minimum of fifty (50) storm drains will be marked yearly.

3.4 Public Stormwater Meeting

3.4.1 General Description

The City of Jonesboro Stormwater Management Board (SWMB) will hold monthly meetings to review storm water policy and implementation of its program and encourage involvement from the public on future policy changes. The SWMB meets the third Wednesday of every month.

3.4.2 BMP Goals and Objectives

To involve the public with current stormwater issues and allow public input on future policy changes.

Information gathered from each of the above activities will be reviewed and summarized in the city's annual report. Implementation of existing BMPs will be fine tuned as needed and measurable goals will be adjusted as appropriate and the basis of any changes will be reported in the next annual report. Feedback from the SWMB meetings and other sources will be used to improve implementation of all six minimum control measures.

4.0 Illicit Discharge Detection and Elimination

The term "illicit discharge" is defined in EPA's Phase II storm water regulations as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to an NPDES permit and discharges resulting from fire-fighting activities." Illicit discharges can be categorized as either direct or indirect.

Examples of direct illicit discharges:

- sanitary wastewater piping that is directly connected from a home to the storm sewer
- materials (e.g., used motor oil) that have been dumped illegally into a storm drain catch basin
- a shop floor drain that is connected to the storm sewer
- a cross-connection between the municipal sewer and storm sewer systems.

Examples of indirect illicit discharges:

- an old and damaged sanitary sewer line that is leaking fluids into a cracked storm sewer line
- a failing septic system that is leaking into a cracked storm sewer line or causing surface discharge into the storm sewer.

The result of illicit discharges is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses and bacteria to receiving water bodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife and human health. To prevent and detect possible illicit discharges the City of Jonesboro has implemented several BMPs which are described below.

4.1 Illicit Discharge Detection and Elimination

4.1.1 General Description

The City of Jonesboro will implement and enforce a program to detect and eliminate illicit discharges into its MS4 by monitoring commercial and industrial activity within the city limits in order to protect the environment. The City will institute mandatory inspections for new development or remodeling to identify illicit connections to the storm sewer system and will adopt an ordinance that will prohibit illicit discharges to any natural outlet and notify ADEQ of any violations that are discovered to insure compliance with its SWMP. Also, the City will inform public employees, businesses, and the general public of hazards associated with illegal connections and illicit discharges and improper disposal of waste.

4.1.2 BMP Goals and Objectives

To eliminate non-stormwater discharges, not covered under other federal, state, or local permits from entering the city's storm sewer system. This program will use volunteer monitoring and other city and community resources to identify suspicious discharges. Routine inspections will also be performed during dry weather and field tests will be performed, as needed.

4.2 Storm Drain System Mapping

4.2.1 General Description

The City of Jonesboro will maintain a map of its underground storm drainage system showing all drainage structures and outfall locations. Maps will be available to the public upon request and will supply information such as structure type, size, top elevation, and invert elevation.

4.2.2 BMP Goals and Objectives

This system will enable planners to estimate the likely locations of potential illicit connections and allow the public to view the City's infrastructure.

4.3 GIS Database of Outfalls and Surface Streams

4.3.1 General Description

The City of Jonesboro will record the location of storm water outfalls of the City's MS4 system using a GIS-based mapping system. This data will be continuously updated with as-built plan submittals of any infrastructure that is located within city easements and/or street rights-of way.

4.3.2 BMP Goals and Objectives

To have storm drain outfalls identified to enable a quick response to a spill or pollution report. City staff may use this information to help identify the source of pollution and where cleanup needs to occur if a contaminant enters the MS4.

4.4 **Non-Stormwater Discharges and Illegal Dumping**

4.4.1 General Description

Illegal dumping is the disposal of waste in an unpermitted area, such as the back area of a yard, a stream bank, or some other off road area. It can also be the disposing of liquid wastes and trash down storm drains. The City will prohibit by passage of ordinance the illegal dumping of any waste or non-stormwater discharges that will impair water quality and the environment.

4.4.2 BMP Goals and Objectives

To safeguard the public, protect property, and prevent damage to the environment.

All BMPs were selected to ensure that illicit discharges are detected, eliminated, and prevented. The effectiveness of each BMP for this minimum control measure will be gauged and evaluated regularly and adjusted, as needed, and any changes will be included in the next annual report.

5.0 **Construction Site Storm Water Runoff Control**

Construction site storm water runoff has been the target of the two-tiered regulatory system mandated by the EPA. Under the NPDES Phase I storm water program, operators of construction activities that disturb five (5) or more acres are required to obtain coverage under a Construction Storm Water Permit. Pursuant to the NPDES Final Phase II storm water program for MS4s, the minimum area of construction sites required to obtain coverage under the construction storm water permit was reduced to one (1) acre.

The City has an established process to obtain grading permits and to develop and implement Storm Water Pollution Prevention Plans (SWPPPs) for each eligible construction site. The City requires a copy of all ADEQ permits for construction activities in support of ADEQ's NPDES Phase II program, along with other submitted documents. Before and during construction, developers and builders are responsible for implementing the SWPPP and making changes as necessary to meet the requirements of the NPDES Phase II regulations. The City has implemented the below BMPS to control construction site stormwater runoff.

5.1 **Storm Water Drainage Design Manual**

5.1.1 General Description

The City developed and implemented Stormwater Regulations and a Storm Water Drainage Design Manual for guiding, regulating, and controlling the

design, construction, use, and maintenance of any development or other activity that disturbs or breaks the topsoil or results in the movement of earth.

5.1.2 BMP Goals and Objectives

To reduce erosion and prevent sedimentation from entering the City's waterways and to state requirements that must be met for all plan submittals to ensure compliance with all federal, state, and local laws.

5.2 Site Planning/Training

5.2.1 General Description

The City will establish a contractor-oriented program for developers and builders providing guidance in construction site planning to include ADEQ permit procedures and requirements.

5.2.2 BMP Goals and Objectives

To educate the land development community on all regulations in effect that are intended to prevent degradation of the environment from construction activities.

5.3 Inspections

5.3.1 General Description

The City will designate a Stormwater Inspector to perform random inspections of construction sites to gauge overall compliance with the local stormwater regulations.

5.3.2 BMP Goals and Objectives

To ensure compliance with all federal, state and local laws.

Information gathered from each of the above activities will be reviewed and summarized in the City's annual report. Implementation of existing BMPs will be modified as needed and measurable goals will be adjusted as appropriate and the basis of any changes will be reported in the next annual report.

6.0 Post-Construction Storm Water Management in New Development & Redevelopment

In areas undergoing new development or redevelopment, post-construction stormwater management is necessary because runoff from these areas has been shown to significantly affect receiving water bodies. Many studies indicate that 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 quantity of pollutants in storm water runoff. As runoff flows over

areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans.

The second type of post-construction runoff impact occurs by increasing the quantity of water delivered to the water body during storms. Increased impervious surfaces 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 water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

All storm water BMPs should be inspected for continued effectiveness and structural integrity on a regular basis. Generally, all BMPs should be checked after each storm event in addition to these regularly scheduled inspections. Outlined below are the city's BMPs for Post-Construction Storm Water Management in New Development & Redevelopment.

6.1 BMP Manual

6.1.1 General Description

The City developed and implemented an Erosion Control Manual to promote the public welfare by providing guidance to the proper installation and maintenance procedures for best management practices pertaining to erosion and sediment control.

6.1.2 BMP Goals and Objectives

To reduce erosion and prevent sedimentation from entering the City's MS4 and waterways.

6.2 Long-term Operation and Maintenance of Stormwater Management Facilities

6.2.1 General Description

The City will ensure the long-term operation and maintenance of stormwater management facilities that contribute to water quantity and quality through a Stormwater Management Facility Agreement.

6.2.2 BMP Goals and Objectives

To ensure that stormwater management facilities and BMPs are properly functioning as they were designed to control stormwater quantity and quality.

6.3 Inspections

6.3.1 General Description

The City will designate a Stormwater Inspector to perform random inspections of construction sites to gauge overall compliance with the regulation of the Storm Water Drainage Design Manual and the Erosion Control Manual.

5.3.2 BMP Goals and Objectives

To ensure compliance with all federal, state and local laws and to reduce erosion and prevent sedimentation from entering the City's MS4 and waterways.

Information gathered from each of the above activities will be reviewed and summarized in the city's annual report. Implementation of existing BMPs will be modified as needed and measurable goals will be adjusted as appropriate and the basis of any changes will be reported in the next annual report.

7.0 Pollution Prevention/Good Housekeeping for Municipal Operations

The Pollution Prevention/Good Housekeeping minimum control measure is a key element of the small MS4 storm water management program. This measure requires the small MS4 operator to examine and modify their own actions to help ensure a reduction in the amount and type of pollution that:

- Collects on streets, parking lots, open spaces, storage and vehicle maintenance areas and is discharged into local waterways; and
- Results from actions such as environmentally damaging land development and floodplain management practices or poor maintenance of storm sewer systems.

While this measure is meant primarily to accomplish the goal of improving or protecting the quality of receiving water by altering the performance of operations, it can also result in a cost savings for the City, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused from age and neglect. Below are BMPs the City has implemented for Pollution Prevention/Good Housekeeping for Municipal Operations.

7.1 Maintenance Program & Procedures Assessment

7.1.1 General Description

The City will implement an employee training program which addresses such areas as storm water management, pollution prevention, and pollution reduction from all municipal activities. Employees will be taught through 1) posters, employee meetings, courses, and bulletin boards about storm water management, potential contaminant sources, and prevention of contamination in surface water runoff, 2) field training programs that show areas of potential storm water contamination and associated pollutants, followed by a discussion

of site-specific BMPs by trained personnel, and 3) other agencies about storm water management at various levels of government.

7.1.2 BMP Goals and Objectives

All training programs intend to help City staff realize how their work might impact our waterways. City staff will work together to improve and/or make changes to existing operations to limit stormwater pollution.

7.2 PHF Application and Storage

7.2.1 General Description

The City of Jonesboro will implement BMPs to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers (PHFs) applied in public right-of-ways and at municipal facilities. The City will use its public education program to promote the proper use, handling, storage, and disposal of PHFs. In addition, the City will apply only minimum PHF application rates on public property and right-of-ways and will study current municipal PHF usage to determine the effectiveness and feasibility of using alternatives to PHFs.

7.2.2 BMP Goals and Objectives

To reduce pollutants associated with the application of pesticides, herbicides, and fertilizer.

7.3 Municipal Outdoor Operations

7.3.1 General Description

The City will promote environmental welfare in connection with its various outdoor operations including storm drain cleaning, street maintenance, facilities management, ditch maintenance, flood control, and solid waste pick-up. The City will maintain and promote an unobstructed storm drain system and prevent sediment from entering a stream to the maximum extent practical. The City will minimize pollutants, including sediment, debris, trash, and road salt from entering surface waters by maintaining a street sweeping program. Also, the City will provide trash, green waste, and recycling pickup services.

7.3.2 BMP Goals and Objectives

To provide outdoor operations that collect and remove significant quantities of pollutants that have the potential of entering storm sewer systems and harming the environment.

The City of Jonesboro will regularly evaluate both current conditions and BMP effectiveness and may change BMPs and measurable goals for each minimum control measure to achieve the objective of reducing the discharge of stormwater pollutants to maximum extent practical. The city will update this SWMP according to the procedures outlined in the Arkansas General Permit No. ARR040000.