



*deficient
sewerage system*

Storm Water Management Program

Purpose And Background

The City of Greenwood, Missouri seeks to protect properties and aquatic resources from damage caused by pollutants carried in storm water. To that end, the City has created this Storm Water Management Program (SWMP) designed to meet, at a minimum, the requirements of the National Pollutant Discharge Elimination System (NPDES) and the requirements of the Missouri State Operating Permit ("MSOP", MO-R004000) for Municipal Separate Storm Sewer Systems (MS4s).

The NPDES is a Federal permit program authorized by the Clean Water Act of 1972 and the 1987 Water Quality Act. The program seeks to control non-point source pollution carried by storm water runoff. Storm water runoff significantly impacts water quality by depositing sediment and pollutants into waterways. While the EPA has created programs under the Clean Water Act, implementation of these programs is managed by state environmental agencies. In Missouri, permitting is under the control of the Department of Natural Resources (MDNR)

Greenwood is classified as a MS4 (Municipal Separate Storm Sewer System). As a MS4 community it must develop, implement, and enforce a stormwater management program (SWMP) to reduce the discharge of pollutants to the "maximum extent practicable". Maximum Extent Practicable (MEP) is a technology-based standard established by Congress in the Clean Water Act. Since no precise definition of MEP exists, it allows for flexibility on the part of MS4 operators as they develop their programs.

Over the years, cities, counties and states have regarded stormwater management almost exclusively as a "quantity" issue. Greenwood is no exception and has implemented measures to control and manage increased runoff and flooding due to development. This plan will seek to address issues of storm water quality, while maintaining measures designed to address quantity. In many cases, these two issues may be addressed concurrently or as part of

combined system and the City encourages innovative solutions that will meet the goals of this program while still promoting reasonable development.

Affects Of Development on Stormwater Quality

Pervious and impervious surfaces in the urbanizing landscape collect pollutants such as automobile oil, grease, brake pad dust, sediment from construction sites, bacteria from animal waste, excess lawn care fertilizers and pesticides, as well as atmospheric deposition of phosphorus, nitrogen, mercury and other airborne pollutants. Rainfall washes these surfaces and the runoff can carry high concentrations of these pollutants to nearby drinking water supplies, waterways and properties. Pollution washed from the land surface by rainfall is called nonpoint source pollution. The most critical point in this cycle is termed the "first flush" which is the time during which a majority of accumulated contaminants is washed into the waterways. Treating this first flush then is the most important step a MS4 can perform. The rainfall event deemed to create the first flush is referred to as the "water quality event" and has been determined to be the first 1.37 inches of any storm in the Kansas City Metro area.

Program Overview

This SWMP is implemented in compliance with the Missouri Clean Water Law, (Chapter 644 RSMo. as amended) and the Federal Water Pollution control Act (Public Law 92- 500,92nd Congress) as amended. These statues specifically set forth regulations regarding land development activities to prevent water pollution, stream channel erosion, depletion of groundwater resources and more frequent localized flooding to protect property value and natural resources. SWMPs operated according to the law are intended to address these adverse impacts and comprehensively manage the quality of and quantity of storm water runoff on a watershed-wide basis.

This document shall be reviewed annually in conjunction with preparation of the annual report. This program may be changed during the life of the permit according to the rules of the State General Operating Permit.

Procedures and Requirements

The City currently employs multiple measures that enhance storm water quality. Existing ordinances and practices, including but not limited to the Erosion and Sediment Control Regulations (§410.180), Littering on Public Rights-of-Way and Private Real Property (§210.120), and Disposal of Solid Waste (§225.040), have been implemented and are being enforced. In addition to these measures the City's SWMP will address the following as part of six (6) minimum control measures:

1) Public Education and Outreach on Storm Water Impacts

The City will develop a public education and outreach program which goal shall be to educate the public about stormwater, the impacts of pollution and steps they can take to reduce the pollution. The primary target pollutants the City's program intends to address are litter, sediment*, on-site sewage disposal system effluent, lawn chemicals and fertilizers. The City intends to perform the following in order to meet this goal:

- a) Public meetings
- b) School presentations
- c) Notices on the City cable television
- d) Informational and news items in an area newspaper
- e) Printed educational and informational materials for distribution

The City also intends to investigate the following for feasibility:

- a) Electronic educational and informational materials on a City website
- b) Participation in the Mid-America Regional Council Regional (MARC) Water Quality Program Public Education Plan

The minimum measurable goals the City will meet during the current permit period are:

- a) Distribution of printed materials and/ or public discussion during at least six public meetings annually.
- b) Hold at least one school presentation pertaining to stormwater quality per school year at the local elementary school
- c) Place news, notices or educational information pertaining to stormwater quality on the City cable television channel
- d) Place news, notices or educational information pertaining to stormwater quality in a local newspaper
- e) Maintain printed educational and informational materials at City offices

The City believes these five measures will reach more than 50 percent of the City's approximate 5300 population.

These measurable goals meet the minimum requirements of the State General Operating Permit regulations, were deemed as achievable during the current permit period and have proven effective in other Kansas City Metro area cities. The target audience for these includes the general citizenry, elementary school-aged children, land developers and contractors. The Director of Public Works will be responsible for the overall management and implementation of this measure and will maintain records of the five measurable goals including the number of printed materials distributed, the number of presentations and public hearing held and the number of news stories, notices or educational spots in the local media.

*Big Creek, currently on the 303d list of impaired water bodies, will be a primary area of focus.

2) Public Involvement / Participation

The City will solicit involvement by the general public and civic and private organizations to assist in or perform the following:

- a) Stream cleanup or monitoring campaigns
- b) Stenciling informational markings on storm sewer inlets
- c) Voluntary creation and implementation of BMPs on existing developed sites
- d) Provide input in public hearings or through written or verbal communication related to storm water quality issues

The minimum measurable goals the City will meet during the current permit period are:

- a) Solicit local citizens or civic groups, through media or other avenues, to perform an annual stream cleanup campaign for at least one of the City's three major open-channel drainageways
- b) Solicit local citizens or civic groups, through media or other avenues, to stencil informational markings on storm sewer inlets
- c) Solicit local property and business owners, through media or other avenues, to voluntarily create BMPs, such as rain gardens, native plantings and reducing vegetation fertilization on existing sites
- d) Solicit input from the general citizenry, land developers and contractors and local business and land owners, through media or other avenues, for identification and improvement of stormwater quality related issues

These measurable goals meet the minimum requirements of the State General Operating Permit regulations, were deemed as achievable during the current permit period and have proven effective in other Kansas City metro area cities. The target audience for this measure includes the general citizenry, middle and high school-aged children, land developers and contractors and local business and land owners. The City is small and all ethnic and economic groups should be adequately engaged by the listed goals. The Director of Public Works will be responsible for the overall management and implementation of this measure and will maintain records of the four measurable goals including the type and number of solicitations performed and the public responses.

3) Illicit Discharge Detection and Elimination

The City will develop and implement a program to detect and eliminate illicit discharges (as defined in 10 CSR 20-6.200) into the City's waterways and stormwater conveyances. This program will consist, at a minimum, of the following items:

- a) Complete a GIS storm sewer system map showing the location of all outlets and the names and locations of all waters of the State that receive discharges from those outlets
- b) Review and modify, if necessary, existing ordinance(s) to effectively prohibit non-storm water discharges into the storm sewer system or receiving waters
- c) Develop a plan to detect and address non-storm water discharges to the storm

sewer system including:

- 1) Create procedures for locating priority areas
- 2) Create procedures for tracing sources of illicit discharges
- 3) Create procedures for eliminating illicit discharges
- 4) Create procedures for program evaluation and assessment
- d) Inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of wastes

The minimum measurable goals the City will meet during the current permit period are:

- a) Complete GIS mapping of the City's storm sewer system outfalls
- b) Create or modify and implement an ordinance(s) to prohibit non-storm water discharges into the storm sewer system or receiving waters
- c) Develop a plan to detect and address illicit discharges
- d) Provide illicit discharge educational information to public employees, businesses and the general public

The City is aware that Lake Winnebago currently has Total Maximum Daily Load (TMDL) criteria for Mercury (Hg). This pollutant, which primarily originates through manufacturing or power generating processes, is believed to be carried high in the atmosphere by wind from areas far to the south of Greenwood, eventually settling out onto the land. It is then carried by stormwater runoff into the Lake. The City understands that due to difficulties both in identifying and controlling the source of the pollutant, the State and Federal Governments are currently attempting to address the situation without City participation.

These measurable goals meet the minimum requirements of the State General Operating Permit regulations, were deemed as achievable during the current permit period. The Director of Public Works will be responsible for the overall management and implementation of this measure and will maintain records of the four measurable goals.

4) Construction Site Storm Water Runoff Control

The City has created and adopted an Erosion and Sediment Control ordinance and will continue to refine and enforce this existing ordinance. The existing ordinance, adopted as §410.180 of the Greenwood City Code (GCC), meets or exceeds many of the requirements of the General Permit. The following items will be addressed and incorporated either by ordinance, resolution or policy:

- a) Requirements for construction site operators to control on-site waste such as discarded building materials, concrete truck washout, chemicals, litter and sanitary waste
- b) Procedures for site plan review which incorporate consideration of potential water quality impacts
- c) Procedures for receipt and consideration of information submitted by the public

d) Procedures for site inspection

The minimum measurable goals the City will meet during the current permit period are:

- a) Review and modify, if necessary, the existing Erosion and Sediment Control and other existing ordinances to insure specific requirements for on-site construction site waste control meets the requirements of the MSOP
- b) Develop and implement a written policy for site plan review which incorporates consideration of potential water quality impacts
- c) Develop and implement a written policy for receipt and consideration of information submitted by the public
- d) Review and modify, if necessary, the City's requirements for submission and enforcement of developers' Stormwater Pollution Prevention Plans (SWPPP)

These measurable goals meet the minimum requirements of the State General Operating Permit regulations, were deemed as achievable during the current permit period. The Director of Public Works will be responsible for the overall management and implementation of this measure and will maintain records of the four measurable goals.

5) Post-Construction Storm Water Management in New Development and Redevelopment

The City of Greenwood will work to create a comprehensive plan to minimize stormwater pollutants in newly developed and redeveloped areas. The City expects development of new housing as well as redevelopment in older areas of the City, primarily along Highway 150, with commercial uses. The plan will include:

- a) Specific requirements related to site planning and post-construction BMPs
- b) Policies or ordinances that encourage development in manners such that pollution factors are limited
- c) Education components for developers and the public about stormwater friendly design

The minimum measurable goals the City will meet during the current permit period are:

- a) Develop, implement and enforce an ordinance for the maintenance, operation and status reporting requirements for BMPs
- b) Develop education programs related to stormwater friendly development

The City also intends to investigate the following for feasibility:

- a) Adoption of the APWA / MARC BMP Manual by ordinance or resolution
- b) Development of policies or ordinances to promote stormwater friendly development such as low impact development (LID)

These measurable goals meet the minimum requirements of the State General Operating Permit regulations and were deemed as achievable during the current permit period. The Director of Public Works will be responsible for the overall management and implementation of this measure and will maintain records of the two measurable goals.

6) Pollution Prevention / Good Housekeeping for Municipal Operations

The City will develop and implement pollution prevention and good housekeeping measures for municipal operations policy manual. The manual will contain at a minimum:

- a) Documentation of the City's municipal operations, facilities and equipment
- b) Maintenance procedures, schedules and inspections designed to prevent or reduce stormwater pollution as a result of normal municipal operations
- c) Continuing educational requirements for staff
- d) Record keeping requirements

Develop and implement a drainage ditch cleaning and clearing management schedule.

Seek Board of Aldermen approval for an annual street sweeping program.

The minimum measurable goals the City will meet during the current permit period are:

- a) Creation and implementation of a pollution prevention and good housekeeping measures for municipal operations policy manual
- b) Development and implementation of a drainage ditch cleaning and clearing management schedule
- c) Seeking Board of Aldermen approval and funding for an annual street sweeping program
- d) Commencement of a staff training program

These measurable goals meet the minimum requirements of the State General Operating Permit regulations and were deemed as achievable during the current permit period. The Director of Public Works will be responsible for the overall management and implementation of this measure and will maintain records of the four measurable goals.

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