

2015-2020

Stormwater Management Plan

City of Bethany

Julie Shannon and Danielle Barker
May 2015



Executive Summary

The City Bethany has prepared this Stormwater Management Plan document which provides descriptions of all activities that will be conducted on behalf of Bethany to meet its obligations under the Oklahoma Department of Environmental Quality's (ODEQ) general permit OKR04 for Phase II Municipal Separate Storm Sewer System Discharges for Small Cities within the Oklahoma.

The City of Bethany has prepared this Stormwater Management Plan (SWMP) document which provides descriptions of all activities that will be conducted on behalf of Bethany to meet its obligations under the Oklahoma Department of Environmental Quality (ODEQ) general permit for Phase II Municipal Separate Storm Sewer System Discharges for Small Cities within the State of Oklahoma (OKR04).

This SWMP along with the Notice of Intent (NOI) that together constitutes the application for coverage under the OKR04 general permit. All six Minimum Control Measures (MCMs) have been addressed in this SWMP. In addition, the City of Bethany has elected to incorporate the "Seventh MCM" into the SWMP in which the city could have continuous coverage for all future municipal construction activities.

Each MCM has a number of Best Management Practices (BMPs) that constitute the core activities pertaining to each MCM. Appendices summarize the BMPs and provide measurable goals for each BMP, along with descriptions, implementation schedules and estimated annual costs. In addition, the SWMP test includes a BMP summary table to each MCM.

According to our original plan, the City of Bethany has elected to rely upon the ODEQ to fulfill the requirements of the fourth MCM (Construction Site Runoff Control), until a plan is developed and operational. The ODEQ has an established Oklahoma Pollutant Discharge Elimination System (OPDES) permit program under the OKR10 General Permit for Construction Activities. However, the City of Bethany has the ability to put Stop Work orders on construction sites that allow their crews to create conditions that would violate our permit, and has will use that tool when necessary.

Every reasonable effort has been made to comply with all requirements in the State's OKR04 general permit for small Municipal Separate Storm Sewer Systems (MS4s). To this end, verbatim passages of the OKR04 text were duplicated into the SWMP, as appropriate.

To help implement many aspects of the Phase II requirements, particularly regarding public education and public participation, the City of Bethany is working with the Oklahoma Conservation Commission and COSWA, the Central Oklahoma Stormwater Association.

Stormwater runoff from urban areas and lands modified by human activity causes adverse environmental impacts to surface waters by changing stream flows, destroying aquatic habitat and increasing pollutant loadings and concentrations. Such runoff often contains sediment, nutrients, metals, pathogens, toxins and oxygen-demanding substances. When these pollutants are carried to streams, rivers, lakes, and wetlands they can impair water quality, carried to streams, rivers lakes and wetlands they can impair water quality, cause habitat degradation and threaten beneficial uses of water. Polluted stormwater runoff can have many adverse effects on plants, fish, animals and people.

History of Stormwater Regulations

A permitting program for stormwater discharges was established under the Clean Water Act as the result of a 1987 amendment. The Act specifies the level of control to be incorporated into the National Pollutant Discharge Elimination System or NPDES stormwater permitting program depending on the source (industrial versus municipal stormwater). These programs contain specific requirements for the regulated communities/facilities to establish a comprehensive stormwater management program or stormwater pollution prevention plan to implement any requirements of the total maximum daily load (TMDL) allocation. There are two phases:

- **Phase I** In 1990 the EPA promulgated regulations for establishing water quality based municipal stormwater programs to address stormwater runoff from certain industrial and construction activities and from medium and large municipal separate storm sewer systems serving populations of 100,000 or greater. These "Phase I" regulations were incorporated into the existing NPDES permit rules that address point source dischargers. As a result, urban non-point source runoff became regulated as a point source.

- **Phase II** On December 8, 1999, EPA published final regulations that address urban stormwater runoff from cities under 100,000 population and counties that lie within the Urbanized Area as defined by the latest US Bureau of Census designation or otherwise designated by the ODEQ as being required to obtain coverage under the State's Phase II Stormwater Program. The ODEQ has primary jurisdiction over permitting and enforcement of the Phase II Stormwater Program for Oklahoma. On February 8, 2005, the ODEQ finalized their General Permit (OKR04) for Phase II Small Municipal Separate Storm Sewer System Discharges within the State of Oklahoma.

Oklahoma Water Quality Standards

The foundation of Oklahoma's water quality protection efforts is its standards. Oklahoma's Water Quality Standards are a set of rules adopted by Oklahoma in accordance with the federal Clean Water Act. The standards provide a baseline against which the quality of waters

Abbreviations

The following abbreviations are commonly used in association with stormwater regulations:

ABBREVIATION INDEX	
BMP	Best Management Practice
CSO	Combine Sewer Overflow
CWA	Clean Water Act
DEQ	Department of Environmental Quality
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
GIS	Geographic Information System
GPS	Global Positioning System
LID	Low Impact Development
MCM	Minimum Control Measures
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
NPS	Non-Point Source
OAC	Oklahoma Administrative Code
ODEQ	Oklahoma Department of Environmental Quality
OPDES	Oklahoma Pollution Discharge Elimination System
OWQS	Oklahoma Water Quality Standards
POTW	Publicly Owned Treatment Works
SMS4	Small Municipal Separate Storm Sewer System
SWMP	Stormwater Management Plan
SWMPPP	Stormwater Pollution Prevention Plan (aka SWP3)
SWPMP	Stormwater Pollution Management Plan
SWP3	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
WQS	Water Quality Standards

MEP is an acronym for “Maximum Extent Practicable,” the technology-based discharge standard for Municipal Separate Storm Sewer Systems to reduce pollutants in stormwater discharges that was established by CWA § 402(p). A discussion of MEP as it applies to MS4s is found at 40 CFR § 122.34.

MS4 is an acronym for “Municipal Separate Storm Sewer System” and is used to refer to a Large, Medium, or Small Municipal Separate Storm Sewer System. The term is used to refer to either the system operated by a single entity or a group of systems within an area that are operated by multiple entities (e.g., the Oklahoma City MS4 includes MS4s operated by Oklahoma City, the Oklahoma Department of Transportation, and others).

Municipal Separate Storm Sewer System is defined at 40 CFR § 122.26(b)(8) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a state, city, town, borough, county, parish, 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, drainage district. This also includes a similar entity, an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR § 122.2.

NOI is an acronym for “Notice of Intent” to be covered by this permit and is the mechanism used to “register” for coverage under a general permit.

Outfall is a place where stormwater from our MS4 leaves the Bethany city limits.

Recharge Area is an area where stormwater drains into groundwater and resurfaces as a spring or flows to a well.

Small Municipal Separate Storm Sewer System is defined at 40 CFR § 122.26(b)(16) and refers to all separate storm sewers that are owned or operated by the United States, 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 CWA that discharges to waters of the State, but is not defined as “large” or “medium” municipal separate storm sewer system. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include

Allowable Discharges

Non-stormwater discharges to the MS4 shall be prohibited. For the purpose of this permit, the following discharges need not be addressed as illicit discharges:

- a. Water line flushing
- b. Landscape irrigation
- c. Diverted stream flows
- d. Rising ground waters
- e. Uncontaminated ground water infiltration to MS4's
- f. Uncontaminated pumped ground water
- g. Discharge from potable water sources
- h. Foundation drains
- i. Air conditioning condensation
- j. Irrigation water
- k. Springs
- l. Water from crawl space pumps
- m. Footing drains
- n. Lawn watering
- o. Individual residential car washing
- p. Flows from riparian habitats and wetlands
- q. De-chlorinated swimming pool discharges
- r. Street wash water
- s. Discharges from emergency fire-fighting activities provided procedures are in place for the Incident Commander, Fire Chief, or other on-scene fire-fighting official in charge to make an evaluation regarding potential releases of pollutants from the scene. Measures must be taken to reduce any pollutant releases to the maximum extent practicable subject to all appropriate actions necessary to ensure public health and safety. **DISCHARGES FROM FIRE-FIGHTING ACTIVITIES ARE NOT AUTHORIZED.**

1. Public Education & Outreach

Permit Requirements: Develop and implement a public education and outreach program to distribute information and educational materials to the community and to conduct 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.

Rationale: An informed community is essential for the success of the Stormwater Pollution Prevention Program. The selected best management practices are intended to increase the community's understanding of sources and environmental impacts of stormwater pollution, as well as ways to reduce the amount of pollutants in stormwater discharges. The resulting goal is to encourage behaviors and practices which will result in environmental benefit for the community.

Action: A multi-media approach will be used in Bethany's program: brochures, website, cable channel information, radio and education programs.

2. Public Participation

Permit Requirements: Develop and implement a plan to encourage public involvement and participation in the creation of a stormwater management program. Develop and implement a process by which public comments are received and reviewed by the person running the program. Make the stormwater management plan and the notice of intent available to the public. Comply with State and Local public notice requirements when implementing the program.

Rationale: Public participation in stormwater programs encourages public interest and ownership in pollution prevention efforts, as well as establishing two-way communication between the city government and the community. Citizen involvement in the decision making process encourages broader public support, facilitates program implementation, and provides a source of information and connections with other community and government groups. The program intends to provide multiple means for input of public concerns as well as activities in which the public can participate.

Action: The City of Bethany's program will sponsor, facilitate or organize volunteer stream clean-ups, public events and public meetings.

5. Post-Construction Runoff Management

Permit Requirements: Develop, implement and enforce a stormwater runoff program to address new development and structural and or non-structural best management practices appropriate for the community. Create ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects. Ensure adequate long-term operation and maintenance of best management practices.

Rationale: The goal of this measure is to reduce the amount of stormwater runoff from development and increase stormwater infiltration.


Action: The City of Bethany will draft an ordinance to include regulations to control stormwater runoff from new development and redevelopment.

6. Municipal Good Housekeeping

Permit Requirements: 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. Develop and use training materials for employees 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.

Rationale: Municipalities can be some of the worst contributors of pollutants to the MS4.

Actions: Employee Training will be offered. The City will inventory municipal operations and activities that contribute to stormwater, assess infrastructure improvements needed, etc.

INFALL LOCATIONS				
	#	Infall Location	Structure Type	MS4
	1	NW 50th & Redmond	Earth Channel	Warr Acres
	2	NW 34th & Hammond	Concrete Lined Channel	Warr Acres
	3	NW 25th between Penial & Donald	Concrete Lined Channel	OKC
	4	NW 50th & McMillian	Earth Channel	OKC

OUTFALL LOCATIONS				
	#	Infall Location	Structure Type	MS4
	1	NW 65th & Rocwell Cemetary North Boundary	12" CGMP	OKC
	2	NW 63rd & Mueller	Surface runoff	OKC
	3	NW 53rd & College (North Boundary of McCory Park)	Earth Channel	Warr Acres
	4	NW 48th & Donald	Surface runoff	Warr Acres
	5	NW 46th & Redmond	42" RCP	Warr Acres
	6	NW 46th & Hammond	48" RCP	Warr Acres
	7	NW 36th & Hammond	Concrete Lined Channel	Warr Acres
	8	NW 30th & Redmond	Concrete Lined Channel	OKC
	9	NW 16th & Gleason	Earth Channel	OKC
	10	NW 16th & Divis	(2) 6'x4' RCB	OKC
	11	NW 25th & Eagle	(2) 65' x 40' RCB	OKC
	12	NW 38th Terr & Overholser Dr.	24" RCB	OKC
	13	NW 39th & Overholser Dr.	Earth Channel	OKC
	14	NW 60th & Rockwell	10x12 RCB	OKC

Municipal Facilities

The following facilities are owned by the City of Bethany and are subject to periodic inspections:

	Facility	Address	Potential Pollutants or Chemicals Stored
1	City Hall	6700 NW 36th	n/a
2	Police Station	6714 NW 36th	n/a
3	Fire Station	3919 N Rockwell	Misc. chemicals
4	Public Works	5200 N Central	Salt, sand, misc. chemicals
5	Sanitation	5300 N Central	Floatables, waste
6	Maintenance Garage	5200 N Central	Misc. chemicals
7	Vehicle Fueling	5200 N Central	fuel
8	Animal Control	5100 N College	Misc. chemicals
9*	Water Treatment Plant	8300 NW 50th	Water treatment chemicals
10*	Waste Water Treatment Plant	Not in City Limits)	Misc. chemicals, sewage
11	Ripper Park Swimming Pool	NW 30 th & Thompkins	Pool chemicals
12	14 City Parks	various	Fertilizers, weed killer, etc.

*Entities are also regulated by ODEQ.

Best Management Practices

Best management practices are activities that the City chooses to fulfill permit requirements. There are no specific BMPs required nor are there a certain number of BMPs required, however it is expected that there will be a range of BMPs offered for each of the six minimum control measure categories. The tables listed below are used as a checklist but also as a reporting tool for the annual report which will be due March 1st each year.

Public Education and Outreach

	BMP Activity	Target Audience	Frequency	Goal Met	Metrics	Keep BMP?
1	Brochure: After the Storm at City Hall and Library Racks	General public	20 copies stocked bi-annually (see log)			
2	Training WQ and Regs	City Staff	annual			
3	Discuss Phase II Program in Public Meeting	General Public	At least once during permit cycle			
4	Events Sponsor & Participate	General Public	annual			
5	Public Service Announcement- local television or radio station (with COSWA)	OKC area listeners	Annual campaign			

6. ADD WEBSITE/PAGE RESIDENTS UPDATE AS NEEDED (AT LEAST ONCE PER PERMIT CYCLE)

Public Participation and Involvement

	BMP Activity	Target Audience	Frequency	Goal Met	Metrics	Keep BMP?
6	Comply with State and Local Public Notice Requirements	General Public	All public meetings			
7	Support Regional Agency	MS4 staff	One per permit cycle (COSWA) ONCE ANNUALLY			
8	Sponsor Big Trash Clean up	General Public	Once annually			
9	Household Hazardous Waste Collection	General Public	Ongoing drop off at OKC facility			
10	Sponsor and participate in clean-up events	General public & city staff	annually		8000 newsletters mailed	

Pollution Prevention and Municipal Good Housekeeping

	BMP Activity	Target Audience	Frequency	Goal Met	Metrics	Keep BMP?
26	Training: Stormwater and City Activities (videos-IDDE & Raincheck)	Public works	annual			
27	Conduct MS4 inspections to track and clean out debris	Public Works	As necessary			
28	Take appropriate enforcement action to abate sources	Code Enforcement & Inspection	As necessary			
29	Create mechanism to receive info from public	General Public	Mayor's Action Line ongoing			

Required Activities

Special programs are required under each minimum control measure in order to achieve compliance. These programs are listed below:

1. Education and Outreach Program

- **Brochures & Bookmarks:** Utilize brochure created by the EPA “After the Storm” in English and Spanish. Utilize bookmarks created by EPA for library location.
- **Radio Media:** Partner with COSWA to create radio commercials about stormwater pollution prevention. Currently using the “I’m an Everyday Environmentalist” campaign for 2015.
- **Website:** Utilize our City website to include information about Stormwater pollution prevention.
- **Newsletters:** Utilize our quarterly City newsletter to include articles about Stormwater pollution prevention and promote big trash, household hazardous waste drop off and community clean ups.
- **Public Discussions:** Discuss the program once annually in a public meeting.
- **Education Venues:** Partner with Oklahoma Conservation Commission or other entity to present education programs at public schools or aftercare programs. (Bethany and Putnam City Schools, YMCA and Floyd Center aftercare programs)

2. Public Participation Program

- Partner with other entities to sponsor annual clean-up events
- Promote Mayor’s action line through other media
- Create interactive educational venues such as contests.

3. Dry Weather Field Screening Program

- **Frequency:** twice a year
- **Locations:** 14 outfalls and 5 infalls (see charts)
- **Criteria:** Outfalls and Infalls
- **Checklist:** strange smells, discoloration of water, discoloration of surrounding land area, standing water, signs of dumping
- **Document:** Create database / log of observations
- **Reporting:** Include log sheets in annual report

4. Operations and Maintenance Program

- The Stormwater Department has purchased 2 training videos for annual staff training of parks, streets and public works. Raincheck and IDDE videos are on the stormwater shelf in the office of the Community Development Director.
- Training will be held annually at regularly scheduled safety training sessions. Must be scheduled with Public Works Director or Assistant City Manager.
- Prepare and distribute self-audit for departments annual review.

Ordinances

Bethany's stormwater ordinances can be found in Chapter 54 of the Code of Ordinances. Topics discussed in the ordinances include:

- Stormwater Fee
- Definitions
- Responsibility for Administration
- Construction Activities
- Post Construction Activities
- Illicit Discharges
- Penalties for Violations

Other ordinances that could be passed pertaining to stormwater pollutant reduction might be a landscape ordinance or a low-impact development ordinance.

Evaluations & Audits

Self-Evaluations

Community Development should review the program and best management practices annually when preparing the annual report. Departments such as Public Works, Streets and Parks should review their practices upon permit renewal.

Audits

Once every 5 years, the ODEQ will audit the City of Bethany's Stormwater Program. A template has been designed by the water quality division to facilitate this process. Eight sections (listed below) are reviewed.

ODEQ Audit Checklist		
#	Item	Activities – Sample Questions
1	SWMP (plan)	Do you have a new plan? Have you submitted a NOI or modification request?
2	Public Education and Outreach	Is your Education Outreach Program created?
3	Public Participation and Involvement	Do you have public activities? Mechanism for receiving complaints? How do you review?
4	Illicit Discharge Detection and Elimination	Program created? Ordinance in place? Map of MS4? Dry weather field screen program? Checklist or reporting form created? Frequency?
5	Construction Site Runoff Controls	Construction Ordinance? Construction site BMPs? Technical guide? Site Plan Review? Project Tracking? Inspection checklist?
6	Post Construction in New Development or Redevelopment	Bmps, master plan, open space, buffers, lid, etc?
7	Pollution Prevention / Good Housekeeping for MS4 Operations	Log of rain events? Data base of findings? Training and guidance materials, mapping, maintenance, cleaning, equipment, disposal, flood plain?
8	Municipal Construction Activities	Do we do our own construction? (We usually contract out projects rather than do our own construction.)

Forms

1. **BMP Table sheets for Annual Report**
2. **Brochure Restocking Form**
3. **Citizen compliant form**
4. **Incident Report Form**
5. **Land Disturbing Permit**
6. **Construction Inspection Form**
7. **Outfalls & Infalls Check Sheet**
8. **Dry Weather Field Screening Reporting Form**

Supporting Documents

- + FLYER*
1. Brochure Master Copies
 2. Construction Industry Info Flyer
 3. BMPs for Businesses
 4. Sample Newsletter
 5. Sample Water Bill

2. BMPS for Businesses



BMPS

Best Management Practices for *Bethany* Businesses

- Never put anything in a storm drain that is not rain water. Storm drains lead to rivers and lakes.
- Bag or mulch leaves, grass clippings and yard waste. Do not blow, sweep or rake yard waste into the street. It will clog storm drains and cause floods.
- Never apply fertilizers, pesticides, herbicides or other toxic lawn chemicals when rain is forecasted in the next 24 hours. Always follow instructions for application and consider testing soils to see what nutrients are needed.
- Clean spills and leaks immediately with absorbent materials.
- Dry sweep parking areas instead of power-washing.
- Dispose of all waste and solvents in a manner that keeps them from being exposed to rainfall.
- Keep dumpster lids closed when not in use.
- Chemicals should be stored indoors or in a covered area to prevent leakage and exposure to storm drains.
- Report large chemical spills to fire department to mitigate harm to the public and the environment.
- Clean vehicles in a bay that drains to sanitary sewer or use car wash.
- Dump wash and mop water into sanitary sewer.
- Cooking grease should be disposed of in grease bin, not dumpster.
- Recycle used motor oil, anti-freeze, machine solvents, lubricants and other automotive and shop fluids as well as batteries and tires.
- Do not store items like used batteries outside.
- Use secondary containment under machinery to capture metal filings, saw dust, etc.
- Use soaps that are labeled phosphate-free or biodegradable but be aware that these are still not appropriate for storm drains.

City of Bethany Stormwater Management Program