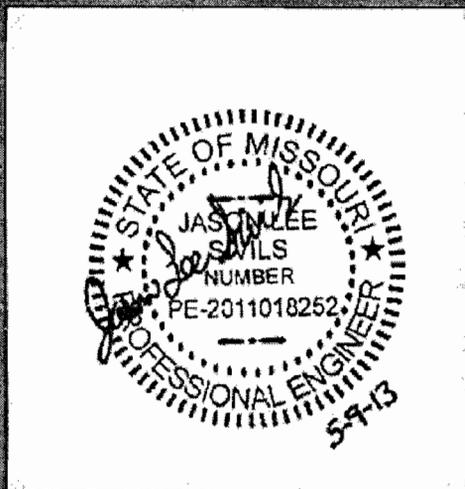


SWRO Christian Co
SWMP MOR040067

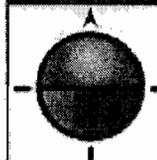
Phase II Stormwater Management Program

Prepared for

**City of Nixa,
Missouri**



**Third Term
Permit
2013 – 2018**



GRA
GREAT RIVER
ASSOCIATES

Executive Summary

The following document is an outline for the City of Nixa, Missouri to use as it enters the second permit term of the Phase II MS4s Program. The City of Nixa intends to comply with the regulations as outlined by State of Missouri General Permit No. MO-R04000. This document is divided into a total of ten chapters. The first chapter begins with an overview of the program, as the chapters progress Nixa's approach to meeting the six minimum control measures is clearly outlined with the final chapter devoted to setting the framework for record keeping.

The City understands the importance of clean streams and rivers. One of the most important steps in ensuring clean streams and rivers is to improve the quality of stormwater runoff. As the City develops this program over the third term of the permit it is the hope that measureable positive impacts will be seen by the City and its citizens.

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Definitions

BMP – Best Management Practices

CERLA – Comprehensive Environmental Responses, Compensation, and Liability Act of 1980

CWA – Clean Water Act of 1972

EPA – Environmental Protection Agency

GIS – Geographic Information System

GPS – Global Positioning System

IDDE – Illicit Discharge Detection and Elimination

JRBP – James River Basin Partnership

MCM – Minimum Control Measure

MEP – Maximum Extent Practicable

MDNR – Missouri Department of Natural Resources

MDNR Land Disturbance Permit – State requirement for owners to use best management practices to control the migration of silt and sediment into state waters.

Missouri General Permit No. MO-R04000 – Requirements set by DNR for all MS4 Phase II applications

MS4 – Municipal Separate Sewer System

NPDES – National Pollutant Discharge Elimination System

NPDES IDDE: A Guidance Manual for Program Development – A manual on Illicit Discharge Detection and Elimination intended to provide support and guidance to stormwater Phase II communities developing IDDE programs

RCRA – Resource Conservation and Recovery Act of 1976

Section 303(d) – A section of the Clean Water Act listing impaired waters

Stormwater conveyance structure – pipes, junction boxes, inlet boxes, and open channels used to transport stormwater

SWMDP – Stormwater Management Design Plan

SWMP – Stormwater Management Plan

SWPP – Stormwater Pollution Prevention Plan

The City – refers to the City of Nixa, Missouri

TMDL – Total Maximum Daily Load

Watersheds – An area or ridge of land that separates waters flowing to different rivers, basins, or other body of water

WWTP – Wastewater Treatment Plant

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Chapter 1

Phase II Plan Coordination

A. Phase II Overview

As a result of the 1987 amendments to the Clean Water Act the United States Environmental Protection Agency (EPA) began to regulate large to medium municipal separate storm sewer systems (MS4). This regulation, known as Phase I, went into place in 1990. The original Phase I placed the requirement for urban areas with a population of greater than 100,000 to obtain a permit for the discharges of the urban area's MS4 system.

In 2003 the EPA expanded the program by implementation of Phase II of the program. Under Phase II, the MS4 program was expanded to include communities with a population exceeding 10,000 or smaller communities that are included in a Metropolitan Area. In Missouri, Phase II of the program requires individual communities to comply with a general state operating permit. This Permit is State of Missouri General Permit No. MO-R04000. A copy of the permit is included in this document as an appendix.

In order to fully comply with the terms of the permit, it is the intention of the city to:

- Adjust the existing Phase II MS4 Program
- Identify areas where additional programs or resources will be needed

The City will continue to educate the public and some targeted audiences. The goal of the City is to meet all six minimum control measures set forth by the State and Federal Government. As the City works towards these measures, the quantity and quality of stormwater runoff will continue to improve. Each year the plan will be adapted as necessary in an attempt to improve based on situations that arise.

B. Plan Coverage

The City of Nixa is located in Christian County; the fastest growing county in the State of Missouri. Christian County is the 44th fastest growing county in the nation. Between 1990 (population 4,706) and 2010 (population 19,022), the city experienced a staggering growth rate of 304%. The City population, based upon official Census Bureau Data of 2010, is officially 19,022 residents. At the time of the release of 2010 U.S. Census, Nixa had a housing unit stock of 7,871 units within Nixa's city limits.

Nixa has a humid continental climate, characterized by mild winters and hot summers. The average yearly temperature is in the fifties (F°) and the average relative humidity is 73%. Total precipitation for years of record range from a low of 25.21 inches in 1953 to a high of 63.19 inches in 1990, with an average annual precipitation normally ranging between 30 to 50 inches.

The City is home to several retail and industrial employers. Nixa is home to 531 businesses employing between 1 and 60 employees with the following eight as the city's largest employers:

Nixa R-2 School District	629 employees
Wal-Mart	372 employees
Diversified/Accurate Plastics	125 employees
City of Nixa	124 employees
Price Cutter	96 employees
Mercy Healthcare	89 employees
Christian County Health Care	82 employees

Drainage features in the city include detention/retention ponds and underground storm sewers in addition to numerous open channels. There are approximately 50.76 miles of stormwater drains and 996 manholes/inlets in the City. The city has expanded the stormwater system by approximately 8 miles in the last two years due to new development. There are relatively few areas of the city that do not have underground storm sewer. These areas are generally concentrated in the east central part of town which constitutes the older area of Nixa that was developed prior to the city adopting a storm water management plan.

The City itself has a footprint of approximately 6.2 square miles. Figure 1-1 shows the city limits.

C. Major Watersheds

Nixa is situated on the upland Springfield Plateau. The gently rolling landscape gives way to steep slopes in the James River drainage basin along the northern edge of the city with the southeast portion of the city draining to the Finley River. Elevations range from a high of 1,325 feet above mean sea level in the southwest to a low of approximately 1,095 feet where the James River leaves the area. The city is located in a Karst area where sinkholes are prevalent with the highest concentration located in the northwest part of town. There are over 265 sinkholes and 23 caves in the Nixa Karst area.

The surface drainage for the City of Nixa is divided between the James River to the north and the Finley River to the south. Approximately 70% of the area drains into tributaries of the James River and 30% drains into the Finley River. The James River carries approximately 176 cubic feet of water per second with the Finley River carrying an average of 30 to 50 cubic feet per second.

Chapter 2

Committee and Manuals

A. City's MS4s Committee

This program will require the City to adopt guidance in the minimum control measures of post-construction site runoff. In order to properly build this guidance with buy in from needed stakeholders the City will develop a volunteer MS4 Committee.

This committee will be made up of volunteers from the City and should include a mix of business representatives, concerned citizens and City staff. This mix will help to build comprehensive guidance for multiple minimum control measures.

B. Manual

The primary task of the committee will be to develop the City of Nixa Stormwater Management Manual. This manual will address the following:

1. *Post-Construction stormwater management regulations.*

C. Long Term Solution

The final goal of the committee will be to develop a long term solution to the overall stormwater program within the City of Nixa. The long term solutions should include goals for the future along with budget recommendations and funding guidance for the program.

D. Rationale for Goals

Specific goals for each year of the permit for the Committee to complete are presented as follows:

Year 1

The City will form the Committee.

Year 2

The Committee will outline the City of Nixa Stormwater Management Manual.

Year 3

The Committee will release draft sections for public review.

Year 4

The Committee will complete the City of Nixa Stormwater Management Manual.

The Committee will complete the Long Term Solutions for future of City's Stormwater.

Year 5

Update City of Nixa Stormwater Management Manual as needed.

Take public input on Long Term Solutions for City's Stormwater.

Chapter 3

Minimum Control Measure: Item 1

Public Education and Outreach

A. MS4 Permit Requirements

Section 4.2.1.1 of the general MS4 permit requires the permittee to 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. The permit requires inclusion of the following elements in this program:

4.2.1.1.1- Identification of the target pollutant sources the permittee's public education program is designed to address;

4.2.1.1.2 – Identification of target audiences for the permittee's public education program who are likely to have significant stormwater impacts (including commercial, industrial and institutional entities);

4.2.1.1.3-A plan to inform individuals and households about steps they can take to reduce storm water pollution;

4.2.1.1.4- A plan to inform individuals and groups on how to become involved in the SWMP (with activities such as local stream and lake restoration activities);

4.2.1.1.5-The permittee's outreach strategy, including the mechanisms (e.g. printed brochures, newspaper, media, workshops, etc.) to reach target audiences, and how many people expected to be reached over the permit term; and

4.2.1.1.6- A plan to evaluate the success of this minimum control measure.

B. Benefits of Public Education and Outreach

An informed and knowledgeable community is crucial to the success of any stormwater management program. Without a public knowledgeable about local water problems caused by urban runoff, it is difficult to obtain public support for local stormwater programs. This support ranges from individuals changing their daily actions to community support for all stormwater quantity and quality measures. As with all of the measures, the goal is to reduce the magnitude of a flood and degradation of local water bodies and improve chemical, physical and biological quality of state waters. In order to achieve these benefits, public education programs shall be targeted to these outcomes:

- 1. The proper handling and disposal of solid wastes.*
- 2. The proper handling and disposal of hazardous wastes.*
- 3. The proper handling and application of fertilizers and pesticides on lawns.*
- 4. The elimination of illegal dumping of oil and other chemicals into storm drains.*

5. *The importance of erosion control structures on construction sites to prevent sediment from eroding into storm drains.*
6. *The importance of detention basins and other post-construction structures to prevent erosion downstream of new development.*

In the 1990's concern over the effects of water quality in the James River watershed led to the City participating in the founding of the James River Basin Partnership (JRBP).

The James River Basin Partnership is a grass roots locally led organization aimed at providing the basic knowledge for citizens to make informed, responsible decisions about the use and preservation of our water resources. The JRBP is a project of the Southwest Missouri Resource Conservation and Development (RC&D), Inc., with support from the Natural Resources, United States Environmental Protection Agency, Branson/Lakes Area Chamber of Commerce, City of Branson, City of Nixa, and Bass Pro Shops.

The 1990s also saw the formation of Ozark Greenways, a citizens group dedicated to the preservation of open space and greenway corridors. The City of Nixa has worked with Ozark Greenways to establish bike and pedestrian plans for future enlargement of the Ozark Greenways trail system.

C. General Pollution Prevention Compliance Activities

Programs will include, but are not limited to, the distribution of educational materials and promotion of outreach activities. Depending on the type of pollution contained in stormwater runoff, the impact on natural watercourses can be cumulatively severe. It must be recognized that each individual is personally responsible for the pollutants in the runoff from his or her occupied land area. Ordinary citizens must be conscious of their responsibility for proper handling of trash, pet waste, and other sources of pollution wherever they are located.

The basic implementation approach will be to seek out and form partnerships with educational institutions, watershed groups, and businesses to assure the water quality needs of the community are met. Education and information will address general pollution prevention goals plus specific pollution problems identified. Educational materials will offer options and alternatives for prevention and proper disposal of pollutants that could be discharged into stormwater.

D. Compliance Activities using Printed Material

The City plans to develop articles to be printed and distributed in the newspaper. The topics of these articles will pertain to the impacts of stormwater and invite the public to attend presentations given, further explaining the impacts. A newsletter will also be developed and distributed explaining stormwater and how the City plans to implement this plan.

The City will continue to print brochures for distribution available to the public at the Public Works Office. The informational brochures discuss the six minimum control measures. These brochures provide information to existing homeowners as well as builders and developers who construct in Nixa.

E. Compliance Activities using Other Media

Other approaches to reach different audiences will include social media through the internet. A stormwater section on the City's website will be established that discusses the six minimum control measures. This will be a collaborative effort between City of Nixa staff and the James River Basin Partnership. The JRBP has established a library of information that can be utilized by the City to provide area specific information to the citizens. The website will target not only the existing citizens of Nixa but also those interested in locating into the community. The website will include a presence of social media with links to Facebook and Twitter.

F. Rationale for Goals

The rationale for the goals for the City is based on research by the Metropolitan Sewer District (MSD) and their success with a similar mixture of activities. The 2012 MSD Stormwater Education Survey identified that brochures are one of the best methods to convey information to residents about water quality. New planning has identified that educating young people about stormwater runoff can encourage future generations to better understand and appreciate the value of protecting and improving water quality.

Specific goals for each year of the permit are presented as follows:

Annually

The City will report the number of brochures and other educational materials distributed to improve water quality.

The City will publish an annual news article to give the citizens an update on the "State of Stormwater".

The City will work with the school district to distribute educational materials on stormwater runoff to both youth and parents.

The City will report the number of newsletters distributed.

Year 1

The City will complete articles distributed to the local newspaper.

Year 2

The City will develop a website with educational materials on stormwater impacts and ways to improve water quality. They will also include social media into the website.

The City will work with local volunteer groups and the local Nixa School District to develop youth target programs.

The City will publish the first newsletter.

Year 3

The City will develop at least an additional brochure.

Year 4

The City will update all existing brochures.

Year 5

No additional goals planned.

Chapter 4

Minimum Control Measure: Item 2

Public Involvement and Participation

A. MS4 Permit Requirements

Section 4.2.2.1 of the MS4 permit requires the permittee to implement a public involvement/participation program that complies with the State and local public notice requirements, and involve the public in the development and oversight of the SWMP, policies and procedures. The permit requires inclusion of the following elements in this program:

4.2.2.1.1 – Involvement of the public in the development and submittal of the permit application and stormwater management program;

4.2.2.1.2 – Plans to actively involve the public in the development and implementation of the public involvement/participation program; identification of target audiences, including the types of ethnic and economic groups engaged;

4.2.2.1.3 – Identification of the types of public involvement activities to be included with the following mandatory (where appropriate):

4.2.2.1.3.1 – Citizen representatives on a stormwater management panel

4.2.2.1.3.2 – Public hearings

4.2.2.1.3.3 – Working with citizen volunteers willing to educate others about the program

4.2.2.1.3.4 – Volunteer monitoring or stream clean-up activities

B. Public Involvement in Stormwater Plan Development

The public can provide valuable input and assistance to a municipal Stormwater Management Program. It is imperative that the public be given every opportunity to play an active role in both the development and implementation of the program since the activities of the public, within urban landscapes, are what produces increased runoff and pollution of stormwater and because the public funds municipalities utilities. An active and involved community is crucial to the success of a Stormwater Management Program because it allows for:

- 1. Broader public support since citizens who participate in the development and decision-making process are involved, they are partially responsible for the program and thus, more likely to take an active role in its implementation.*
- 2. A broader base of expertise and economic benefits, since the community can be a valuable, free, intellectual, resource; and thus can be utilized to promote and support the stormwater program.*

3. *Conduits to other programs since citizens involved in the stormwater program process provide important connections and relationships with other community and government programs.*

In 2005, the City of Nixa teamed up with the James River Basin Partnership to work on an education program aimed at addressing non-point source pollution.

C. Public Participation and Involvement Program

The City recognizes and supports the efforts of the James River Basin Partnership through its stewardship of the James River and Finely River watershed management. The JRBP has been instrumental in developing and initiating best management practices for point and non-point pollution. The City will continue with its support and participation of this group's effort. The programs include:

Stream Clean-ups – The City of Nixa Parks Department developed a Stream Team and added it to its list of programs in the spring of 2008. The City will support at least 2 stream cleanups per year by disposing of the refuse collected free and providing public service announcements of the events. This program is intended to instill stream stewardship in Nixa's youth.

Storm Drain Stenciling Program – The City of Nixa Street Department is installing curb markers on stormwater drains that read "Keep it Clean, Drains to James River". In addition to the drain markers the Street Department is also distributing door hangers when storm drains are marked to provide further education on the effects of non-point pollution. The door hangers provide information on the damaging effects to rivers and streams that can occur from improperly disposing hazardous materials such as yard waste, oil, antifreeze and litter into storm drains. The intent is to educate citizens and provide curb markers to remind citizens to protect our streams and rivers from pollution.

D. Pet Owner Responsibilities

The City will require pet owners to pick up and properly dispose of pet waste except on their own property. In parks, disposal of waste will be available on site by a pet waste scoop dispenser and signage to notify visitors of the requirement, it is estimated these pet waste disposal stations will range in cost from \$125 to \$600 each. Enforcement of waste on someone's own property by their animals will be voluntary unless smell or water quality issues require action by the City. Groups that include pet owners, pet stores, veterinarians, and humane societies are the targeted audience for distributing education materials.

E. Rationale for Goals

Specific goals for each year of the permit are presented as follows:

Annually (Once portion of program is implemented)

The City will report on the number of volunteer stream clean-ups supported.

The City will report on the number of storm drain inlets stenciling projects supported.

The City will report on the number of pet waste bags used during the year.

The City will support two stream clean-ups.

Year 1

The City will outline the process for a stream clean-up and training procedure for volunteers.

Year 2

The City will install pet waste bag dispenser(s).

Year 3

No new goals planned.

Year 4

No new goals planned.

Year 5

No new goals planned.

Chapter 5

Minimum Control Measure: Item 3

Illicit Discharge Detection and Elimination

A. MS4 Permit Requirements

Section 4.2.3.1 of the general MS4 permit requires the permittee to develop, implement and enforce a program to detect and eliminate illicit discharges (as defined in 10 CSR 20-6.200) into the permittee's small MS4.

10 CSR 20-6.200(1)(C)7 defines an illicit discharge as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to a state operating permit, other than storm water discharge permits and discharges from firefighting activities."

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

4.2.3.1.1 - A storm sewer system map showing the locations of all outfalls and the names and location of all waters of the State that receive discharges from those outfalls;

4.2.3.1.2 - An ordinance or other regulatory mechanism to effectively prohibit non-storm water discharges into the permittee's storm sewer system, with appropriate enforcement procedures and actions;

4.2.3.1.3 - A plan to detect and address non-storm water discharges, including illegal dumping, to the permittee's system. The plan shall also address on-site sewage disposal systems that flow into the permittee's storm drainage system;

4.2.3.1.4 - Plans to address the thirteen categories of non-storm water discharges or flows, only if the permittee identifies any of them as significant contributors of pollutants to the permittee's small MS4;

4.2.3.1.5 - A list of other similar occasional incidental non-storm water discharges that the permittee has determined will not be addressed as illicit discharges; and

4.2.3.1.6 - Inventory, inspect and have enforcement authority for industries and commercial enterprises within their boundary that may contribute pollutants via storm water to the MS4

B. Identification of Storm System

The City of Nixa is in the process of developing a Geographic Information System (GIS). This system is being developed to include all public infrastructure the City maintains. As part of the system building the Street Department is currently numbering all inlets and recording the size, location and piping coming into and out of the storm inlets. Through

the GIS system, the City will utilize a Global Positioning System (GPS) to provide coordinates for exact locations of the storm sewer system. The City will continue to develop this mapping system. Field data will be compiled with a completed GIS mapping system to follow.

As defined by the National Pollutant Discharge Elimination System (NPDES):

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 are used to convey waters of the United States

The City will develop a program to inspect all major outfalls and medium outfalls (30" or larger). These outfall sites will need to be inspected/monitored on a regular basis. The number of illicit discharges detected and the number of illicit discharges eliminated will need to be documented, as well as the number of dye or smoke tests conducted.

The City will adopt the NPDES's IDDE: A Guidance Manual for Program Development and Technical Assessments as a procedure manual for all of, but not limited to the following;

1. Procedures for locating priority areas including areas with higher probability of illicit connections or ambient sampling to locate impacted reaches.
2. Procedures for tracing the source of an illicit discharge, including the specific technique to detect the location of the source.
3. Procedures for removing the source of the illicit discharge.

C. Illicit Discharge Enforcement Mechanism

Illicit discharges are defined as a measurable flow during dry weather containing pollutants and/or pathogens in or leaving a stormwater conveyance structure. A stormwater conveyance structure is defined as pipes, junction boxes, inlet boxes, and open channels used to transport stormwater. Measurable flow in or leaving a storm conveyance structure but containing no pollutants and/or pathogens is simply considered discharge. Illicit discharges can result in 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 life, wildlife, and human health.

The City of Nixa is a 4th Class municipality and has adopted building codes as provided for in Missouri State Statues. Nixa currently has the 2006 International Building Code adopted. These codes include the plumbing codes and codes for one and two family residential dwellings. These regulations provide requirements for discharges and connections which are permitted and prohibited to the storm drainage system or to

surface waters as well as enforcement and penalty provisions for violations. Applicable sections of the building and plumbing code are included in Appendix A.

In addition to the 2006 International Building Code the City also has adopted local codes pertaining to proper disposal of wastes. Chapter 17 of the City of Nixa Code of ordinances provides regulations making it unlawful to discharge untreated sewage into any natural outlet within the City. It is also unlawful for any person to place, deposit or permit to be deposited in any unsanitary manner on public or private property any human or animal excrement, garbage or other objectionable waste. Applicable sections of the Nixa Code of Ordinances are included.

D. Illicit Discharge Detection/Elimination

First public employees, as well as, the general public will need to be educated about the harmful effects of illicit discharge through handouts and informational meetings. The continuation to develop formal inspection procedures and protocol with training for staff inspectors will occur. The training efforts will be provided to educate City inspectors in the proper detection of illicit discharges and protocols for reporting and tracking illicit discharges.

A program to monitor and inspect public facilities and commercial/industrial properties for any type of illicit discharge has been implemented. The program consists of documenting any specific complaints received, documenting inspections and/or findings from each commercial/industrial property, documenting number of illicit discharges detected and documenting number of illicit discharges eliminated. Inspections shall be completed using Outfall Reconnaissance Inventory/Sample Collection Field Sheet as seen at the end of this minimum control measure section.

D. Rationale for Goals

Specific goals for each year of the permit are presented as follows:

Annually

The City will report the number of brochures and presentations distributed pertaining to illicit discharge.

The City will report on the number illicit discharges reported.

Year 1

The City will review and adopt NPDES IDDE: A Guidance Manual for Program Development and Technical Assessments as a procedure manual.

The City will inspect the 25% of the stormwater outfalls.

The City will conduct inspections of approximately 50% of the public facilities and commercial/industrial properties.

Year 2

The City will inspect the 25% of the stormwater outfalls.

The City will conduct inspections of approximately 50% of the public facilities and commercial/industrial properties.

Year 3

The City will inspect the 25% of the stormwater outfalls.

The City will conduct inspections of approximately 50% of the public facilities and commercial/industrial properties.

Year 4

The City's MS4s Committee will finalize inspection program for public facilities and commercial/industrial properties.

The City will inspect the 25% of the stormwater outfalls.

The City will conduct inspections of approximately 50% of the public facilities and commercial/industrial properties.

Year 5

The City will conduct inspections of approximately 50% of the public facilities and commercial/industrial properties.

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:				
Responder Information				
Call taken by:		Call date:		
Call time:		Precipitation (inches) in past 24-48 hrs:		
Reporter Information				
Incident time:		Incident date:		
Caller contact information (optional):				
Incident Location (complete one or more below)				
Latitude and longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description		Secondary Location Description:		
<input type="checkbox"/> Stream corridor (In or adjacent to stream)	<input type="checkbox"/> Outfall	<input type="checkbox"/> In-stream flow	<input type="checkbox"/> Along banks	
<input type="checkbox"/> Upland area (Land not adjacent to stream)	<input type="checkbox"/> Near storm drain	<input type="checkbox"/> Near other water source (storm water pond, wetland, etc.):		
Narrative description of location:				
Upland Problem Indicator Description				
<input type="checkbox"/> Dumping	<input type="checkbox"/> Oil/solvents/chemicals	<input type="checkbox"/> Sewage		
<input type="checkbox"/> Wash water, suds, etc.	<input type="checkbox"/> Other: _____			
Stream Corridor Problem Indicator Description				
Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid/Sour	<input type="checkbox"/> Petroleum (gas)
	<input type="checkbox"/> Sulfide (rotten eggs); natural gas	<input type="checkbox"/> Other: Describe in "Narrative" section		
Appearance	<input type="checkbox"/> "Normal"	<input type="checkbox"/> Oil sheen	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Suds
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Floatables	<input type="checkbox"/> None:	<input type="checkbox"/> Sewage (toilet paper, etc)	<input type="checkbox"/> Algae	<input type="checkbox"/> Dead fish
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

Investigation Notes	
Initial investigation date:	Investigators:
<input type="checkbox"/> No investigation made	Reason:
<input type="checkbox"/> Referred to different department/agency:	Department/Agency:
<input type="checkbox"/> Investigated: No action necessary	
<input type="checkbox"/> Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.):	Last 24 hours:	Last 48 hours:
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Carriers:		Photo #s:	
Land Use in Drainage Area (Check all that apply):			
<input type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Ultra-Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		Other: _____	
<input type="checkbox"/> Commercial		Known Industries: _____	
Notes (e.g., origin of outfall, if known):			

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE	DIMENSIONS (IN.)	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<input type="checkbox"/> Circular <input type="checkbox"/> Elliptical <input type="checkbox"/> Box <input type="checkbox"/> Other: _____	<input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____	Diameter/Dimensions: _____ In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> rip-rap <input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____	Depth: _____ Top Width: _____ Bottom Width: _____	(Hatched area)
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, Skp to Section 5</i>			
Flow Description (If present)	<input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER	RESULT	UNIT	EQUIPMENT	
<input type="checkbox"/> Flow #1	Volume	Liter	Bottle	
	Time to fill	Sec		
<input type="checkbox"/> Flow #2	Flow depth	in	Tape measure	
	Flow width	Ft, in	Tape measure	
	Measured length	Ft, in	Tape measure	
	Time of travel	S	Stop watch	
Temperature		°F	Thermometer	
pH		pH Units	Test strip/Probe	
Ammonia		mg/L	Test strip	

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? Yes No (If No, Skip to Section 5)

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 - Faint	<input type="checkbox"/> 2 - Easily detected	<input type="checkbox"/> 3 - Noticeable from a distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 - Faint colors in sample bottle	<input type="checkbox"/> 2 - Clearly visible in sample bottle	<input type="checkbox"/> 3 - Clearly visible in outfall flow
Turbidity	<input type="checkbox"/>	See severity	<input type="checkbox"/> 1 - Slight cloudiness	<input type="checkbox"/> 2 - Cloudy	<input type="checkbox"/> 3 - Opaque
Floatables -Does Not Include Trash!!	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input type="checkbox"/> 1 - Few/slight; origin not obvious	<input type="checkbox"/> 2 - Some; indications of origin (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? Yes No (If No, Skip to Section 6)

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits/Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor pool quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe benthic growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other:	

Section 6: Overall Outfall Characterization

Unlikely
 Potential (presence of two or more indicators)
 Suspect (one or more indicators with a severity of 3)
 Obvious

Section 7: Data Collection

1. Sample for the lab?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
2. If yes, collected from:	<input type="checkbox"/> Flow	<input type="checkbox"/> Pool	
3. Intermittent flow trap set?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	If Yes, type: <input type="checkbox"/> OBM <input type="checkbox"/> Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Chapter 6

Minimum Control Measure: Item 4

Construction Site Stormwater Runoff Control

A. MS4 Permit Requirements

Section 4.2.4.1 of the general MS4 permit requires the permittee to develop, implement and enforce a program to reduce pollutants in storm water runoff from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre 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. The program must include development and implementation of, at a minimum:

4.2.4.1.1 - 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;

4.2.4.1.2 - Requirements for construction site operators to control construction –site 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;

4.2.4.1.3 - Procedures for site plan review which incorporate consideration of potential water quality impacts;

4.2.4.1.4 - Procedures for receipt and consideration of information submitted by the public; and

4.2.4.1.5 - Procedures for site inspection and enforcement of control measures.

B. Benefits of a Construction Site Stormwater Runoff Program

On November 13, 1995 the City of Nixa adopted sediment and erosion control regulations as part of the General Conditions, Technical Specifications and Storm Water Management Plan. These regulations apply to all non-agricultural land disturbances activities in the City. The goal of the regulations is to effectively minimize erosion and discharge of sediment by application of relatively simple and cost effective Best Management Practices (BMPs). The soil and erosion control plan does not apply to construction sites less than one acre in size unless located within 25 feet of a spring, sinkhole, wetland, or watercourse.

Polluted stormwater runoff from construction sites often flows to storm sewer systems and ultimately is discharged into local rivers and streams. Sediment is usually the main pollutant of concern. Studies have shown sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and from 1,000 to 2,000 times greater

than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting situation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation's waters.

Additional pollutants are also often present in stormwater runoff from construction sites and may result in degradation of receiving water. Nutrients (nitrogen and phosphorus) are specific concern and can cause significant impairment of stormwater quality. In addition, solid and sanitary wastes, pesticides, oil and grease, concrete truck washout, construction chemicals, construction debris and metals may be carried by stormwater and cause a negative impact on receiving waters.

C. Land Disturbance Program

Please see Appendix A for current Land Disturbance regulations in place and enforced within the City of Nixa.

D. Rationale for Goals

Specific goals for each year of the permit are presented as follows:

Annually

The City will report on the number of SWPPPs completed.

Year 1

No new goals planned.

Year 2

No new goals planned.

Year 3

No new goals planned.

Year 4

No new goals planned.

Year 5

No new goals planned.

Chapter 7

Minimum Control Measure: Item 5

Post-Construction Stormwater Management in New Development and Redevelopment

A. MS4 Permit Requirements

Section 4.2.5.1 of the general MS4 permit requires the permittee to develop, implement and enforce a program to address storm water 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 the permittee's regulated small MS4. The program must ensure that controls are in place that will prevent or minimize water quality impacts by reasonably mimicking pre-construction runoff conditions on all affected new development projects and by effectively utilizing water quality strategies and technologies on all affected redevelopment projects, to the maximum extent practicable. The permit requires that this program include the following:

4.2.5.1.1 - A strategy to minimize water quality impacts, by reasonably mimicking pre-construction runoff conditions in affected new development and incorporating water quality protection in affected redevelopment projects to the maximum extent practicable, and include a combination of structural and/or non-structural BMPs appropriate for the permittee's community;

4.2.5.1.2 - Use of 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;

4.2.5.1.3 - Means to ensure adequate long-term operation and maintenance of BMPs;

4.2.5.1.5.1 - 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;

4.2.5.1.5.2 - Policies or ordinances that encourage infill development in higher density urban areas and areas with existing storm sewer infrastructure;

4.2.5.1.5.3 - Education programs for developers and the public about project designs that minimize water quality impacts; and

4.2.5.1.5.4 - Other measures such as minimization of the percentage of impervious area after development, use of measures to minimize directly connected impervious areas, site designs that provide for integration of a variety of infiltration practices, and source control measures often thought of as good housekeeping, preventative maintenance and spill prevention.

B. Benefits of a Post-Construction Stormwater Program

Post-construction stormwater management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving water bodies. Many studies indicate that prior planning and design for the control of pollutants, peak discharge, disbursement, and volume in post-construction stormwater discharges is the most cost-effective approach to stormwater quality management.

There are generally two forms of substantial impacts from post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in stormwater runoff. As runoff occurs 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 kind 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 drainage systems where large volumes of runoff quickly flow to the nearest receiving body of water. The effects of the process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

C. Program Intent

As with most communities, the City of Nixa's regulations and requirements for stormwater management have traditionally focused on stormwater facilities for conveyance of stormwater runoff and flood control. The City of Nixa has adopted requirements for the design and construction of storm sewers, drainage channels and stormwater detention basins to serve new developments.

The intent of this minimum control measure is to improve stormwater quality and reduce total stormwater amount by using structural and non-structural best management practices for proposed and existing commercial and industrial developments, and residential subdivision developments.

For the purposes of the stormwater management plan, we define **post-construction stormwater management** as a combination of non-structural and structural BMP's which control both the planning of new developments and the design, construction, operation and maintenance for *permanent* stormwater management facilities in those developments, as opposed to stormwater management for construction sites, which should be by its very nature, temporary.

Nixa's definition of non-structural and structural BMP's may be somewhat different than the commonplace usage at MDNR. However, our definitions are consistent with the way these terms are used nationally and by USEPA:

Non-structural BMPs include practices which affect stormwater quality by activities and requirements which do not include construction of stormwater facilities per se. Examples of non-structural BMP's are public education, standards for land use planning and design, etc.

Structural BMPs are those which result in the actual construction of a stormwater management facility. Permanent structural BMP's included riprap, concrete trickle channels, detention basins, etc., which will remain in place through the life of the development.

The City of Nixa has adopted a number of regulations and policies which are very effective non-structural BMPs with regard to water quality protection. These include:

- Comprehensive Plan
- Zoning Regulations
- Subdivision Regulations
- Floodplain Management Regulations
- Stormwater Design Standards

D. Maximum Extent Practicable (MEP)

The term maximum extent practicable shall be defined as the capture of runoff from the 90th percentile rainfall for the City as well as to capture the first flush of pollutants from directly connected impervious areas. The first flush is generally considered to be the first one-half inch (1/2") of runoff. The owner must submit plans, specifications, and calculations signed and sealed by a professional engineer licensed in the state of Missouri.

E. Rationale for Goals

Specific goals for each year of the permit are presented as follows:

Annually

The City will complete an annual inspection of all permitted BMPs within the City.

Year 1

The City will develop the City's MS4s Committee, see Committee and Manuals Section.

The City will develop a Rain Barrel Program to help individual homeowners purchase and install a rain barrel at a reduced rate, this will be at no direct cost to the City, only simplify the purchasing for homeowners.

Year 2

No new goals planned.

Year 3

No new goals planned.

Year 4

The City will complete and implement the City of Nixa Stormwater Management Manual, in relation with post-construction site runoff.

Year 5

The City will adopt any required Ordinances relating to post-construction site runoff.

Chapter 8

Minimum Control Measure: Item 6

Pollution Prevention/Good Housekeeping for Municipal Operations

A. MS4 Permit Requirements

Section 4.2.6.1 of the general MS4 permit requires the permittee to develop and implement an operations and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. The program is required to specifically address the following areas:

4.2.6.1.1- List all of its municipal operations which are impacted by the requirements below.

4.2.6.1.2 - Maintenance BMPs, maintenance schedules and long term inspection procedures for controls to reduce floatables and other pollutants to the permittee's MS4;

4.2.6.1.3 - 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;

4.2.6.1.4 Good housekeeping practices to keep solid waste from entry into waters of the state to the maximum extent practicable; Adhere to all applicable federal and state regulations concerning underground storage, aboveground storage, and dispensers, including spill prevention, control, and counter measures at all fueling facilities; Manage RCRA and CERCLA regulated substances according to RCRA and CERCLA regulations when transported, stored, or used for maintenance, cleaning, or repair; Procedures for the proper storage of all paints, solvents, petroleum products and petroleum waste products (except fuels) so they are not exposed to storm water;

4.2.6.1.5 Procedures for the proper disposal of waste removed from the permittee's MS4 and area of jurisdiction, including dredged materials, accumulated sediments, floatables and other debris;

4.2.6.1.6 - Procedures to ensure that new flood management projects are assessed for incorporation of additional water quality protection devices or practices; and

4.2.6.1.7- Requires the permittee, using training materials that are available from EPA, State, or other organizations, to develop employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances and stormwater system maintenance.

B. Benefits of a Pollution Prevention/Good Housekeeping Program

The pollution Prevention/Good Housekeeping Operations is a key element of Stormwater Management Program. This measure requires the examination and subsequently altered actions to help ensure a reduction in the amount and type of pollutant that: (1) collects on streets, parking lots, open spaces, storage, and vehicle maintenance areas, all of which are discharged into local waterways; and (2) result from actions such as street maintenance, environmentally damaging municipal 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 activities, facility operations and property management, the City of Nixa can also realize cost savings from such things as spill prevention (thus reducing clean-up costs), inventory control, and re-use/recycling of materials.

C. City Operation and Maintenance

The City will develop and implement an operation and maintenance program. The main intent of the program is the prevention of pollutant runoff from municipal operations. In order to achieve this, the City will check all facilities for possible illicit discharges. For example, some of the floor drains may be connected to a storm sewer and if someone were to pour something down the drain that is considered a pollutant; it then becomes an illicit discharge. The operation and maintenance program will follow guidance in the City's Operation and Maintenance Manual. The manual will consider the following topics:

1. Locations of all City infrastructures.
2. Description of the facilities and activities they perform.
3. Identification of all activities that may cause pollutant runoff.
4. Determination of Best Management Practices (BMPs) that could mitigate the risk of pollutant runoff. This will include spill prevention and control facilities for materials such as paint, solvents, petroleum products, chemicals, toxic or hazardous substances, and substances regulated under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Requirements for on-site fueling facilities in conformance with federal and state regulations concerning dispensing and storage.
5. Required annual training by the City on BMPs for each facility.
6. Inspection requirements.
7. Rewards and enforcement methods, employees that purposely do not follow the adopted operations and maintenance program will be formally written up.

The City will also consider implementing additional environmentally enhancing practices in the manual that are not required for each City facility, for example:

- I. Materials/Supplies acquisition, storage and usage, including
 - Material description,
 - Maximum quantity kept on hand,
 - Allowable storage times, and

- Storage location.
2. Waste generation, storage, disposal, recycling with the following information:
- Waste description
 - Maximum storage capacity
 - Storage location

D. Rationale for Goals

Specific goals for each year of the permit are presented as follows:

Annually

The City will report on compliance inspections of all city facilities.

The City will conduct training for new employees.

Year 1

The City will form an Employee Committee to develop guidance for each facility within the City's System. The committee shall work to complete an updated City Operation and Maintenance Manual for Stormwater Management.

Year 2

The City will complete guidance in the City's Operation and Maintenance Manual.

Year 3

The City will complete an example BMP on city property with documentation of each major step submitted to local media. This will allow citizens to follow steps taken and understand why they being implemented. This will also work closely with MCM No. I.

Year 4

No new goals planned.

Year 5

No new goals planned.

Chapter 9

Record Keeping and Reporting

A. MS4 Permit Requirements

Several sections of the general MS4 permit contain requirements pertaining to permittee record keeping and reporting. These requirements are listed below.

Section 4.1 requires the permittee to designate individuals responsible for the storm water management program.

This section also requires the permittee to inspect any structures that function to prevent pollution of storm water or to remove pollutants from storm water and of the permittee's area of jurisdiction in general to ensure that any BMPs are continually implemented and effective.

Section 4.4 requires the permittee to do an annual review of the permittee's storm water management program in conjunction with preparation of the annual report required under section 5.3. The permittee may update the program subject to the following procedures as specified in the permit:

Changes to individual components, controls or requirements to the SWMP may be made at any time upon written notification to the MDNR.

Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternate BMP may be requested at any time with the following information to be supplied to the MDNR:

1. An analysis of why the BMP is ineffective or infeasible (including cost prohibitive),
2. Expectations on the effectiveness of the replacement BMP, and
3. An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

Section 5.1.1 requires the permittee to evaluate program compliance, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals.

Section 5.2 requires the permittee to retain records of all activities requiring record keeping by the SWMP.

Section 5.3 requires the permittee to submit annual reports to the MDNR by July 28 of each year of the permit term. The reports must include:

The status of the permittee's compliance with permit conditions, an assessment of the appropriateness of the identified BMPs, progress towards achieving the statutory goal of reducing the discharge of pollutants to the maximum extent practicable and the measurable goals for each of the minimum control measures;

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;

A summary of the storm water activities the permittee plans to undertake during the next reporting cycle (including an implementation schedule);

Proposed changes to the permittee's SWMP, including changes to any BMPs or any identified measurable goals that apply to the program elements; and

Notice that the permittee is relying on another government entity to satisfy some of the permittee's permit obligations (if applicable).

B. Record Keeping

The City will be responsible for ensuring that:

- All elements of this SWMP are effectively implemented;
- Required inspections are made;
- Required records are kept; and
- Information required for inclusion in reports to MDNR is provided to the coordinating authority upon request or as scheduled.

The permit specifies certain actions, such as inspections, which each permittee must perform. In addition, this SWMP identifies actions that the permittees are committed to take in order to comply with the requirements of the Phase II Storm Water Regulations and the terms and conditions of the MS4 permit. Measurable goals and time frames for achieving those goals have been established. Accurate and timely record keeping by the permittee is essential in order to document the timeliness and effectiveness of committed actions, to demonstrate compliance with the permit requirements and to provide the basis for the annual reports. The permittee must maintain documentation regarding the implementation of programs and the maintenance of the programs under the MS4 permit. Records are required to be maintained by the permittee for a minimum of three years.

Following are examples of the types of actions for which records should be kept. This listing is not all inclusive:

- Inspections as required by Section 4.1.10 of the permit (Record dates, areas inspected, personnel involved, findings, follow-up actions, etc.). The permittee must conduct inspections within its area of jurisdiction for the activities for which it is responsible under this SWMP.
- Annual program evaluations as required by Section 4.4 of the permit (Record evaluation method and results. If changes are proposed in the SWMP, record the reasoning behind the changes).

- Public information efforts under MCM 1 (Record dates, activity such as brochure distribution, speaking event, etc.; type and number of people reached, milestones in web site development, web site hits; etc.).
- Public involvement efforts under MCM 2 (Record milestones in public involvement activity dates, nature of activities; applicable statistics such as numbers of volunteers, numbers of people reached, quantities of waste collected or removed, miles of stream or road cleaned, number of inlets marked; etc.).
- Illicit discharge detection and elimination efforts under MCM 3 (Record statistics such as number of illicit discharge investigations initiated, number of stream problems identified; results of investigations and problem identification; etc.)
- Construction site storm water control efforts under MCM 4 (Record SWPPPs completed, program modifications/adoptions; statistics such as the number of permits issued; etc.).
- Post-construction storm water management in new development and redevelopment efforts under MCM 5 (Record milestones in review and modification of existing regulations, and City approval of BMPs; examine the need for the Stormwater Quality Permit Fee; etc.).
- Pollution prevention/good housekeeping for municipal operations efforts under MCM 6 (Record milestones in review and modification of existing ordinances, development and adoption of a model O&M program, development of a training program, dates, locations and subject matter of training sessions; statistics such as numbers of training sessions held, numbers of employees trained/refreshed; etc.)

BILL NO. 2009-24

ORDINANCE NO.

AN ORDINANCE REPEALING CHAPTER 25, ARTICLE VII, STORMWATER MANAGEMENT PLAN, PART IV, SEDIMENT AND EROSION CONTROL AND REPLACING IN IT'S ENTIRETY, CHAPTER 25, ARTICLE VII, STORMWATER MANAGEMENT PLAN, PART IV, LAND DISTURBANCE, ILLICIT DISCHARGE & EROSION CONTROL, OF THE ORDINANCES OF THE CITY OF NIXA, MISSOURI.

BE IT ORDAINED BY THE BOARD OF ALDERMEN OF THE CITY OF NIXA, MISSOURI, AS FOLLOWS:

That Chapter 25 Article VII Stormwater Management Plan, Part IV Land Disturbance, Illicit Discharge & Erosion Control shall be amended to read as follows:

PART IV- LAND DISTURBANCE, ILLICIT DISCHARGE & EROSION CONTROL

Section 25-110 Purpose, Goals and Objectives

- A. PURPOSE: The purpose of this section is to protect the health, safety and general welfare of the citizens of Nixa and protect the Waters of the City and Waters of the State through the regulation to the maximum extent practicable of non-storm water discharges to the storm drainage system as required by federal and state law. This section establishes uniform requirements for land disturbance activities in order to control the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

- B. GOALS AND OBJECTIVES: The goal of the regulation is to effectively minimize erosion and discharge of sediment by application of Best Management Practices (BMP's).

This goal can be attained by meeting the following objectives:

1. Stabilize disturbed areas as soon as possible by re-establishing sod, other forms of landscaping, and completing proposed structures, pavements and storm drainage systems.

2. To regulate the contribution of pollutants to the MS4 by storm water discharges by any user.
3. To prohibit illicit connections and discharges to the MS4.
4. To establish legal authority to carry out all inspection, surveillance, monitoring, and enforcement procedures necessary to ensure compliance with this ordinance.

Section 25-111 DEFINITIONS

For the purposes of this section, the following words shall have the definitions hereinafter set forth:

“Accepted” or “Acceptance” means a determination by the Director or designee that the documents under review meets the minimum applicable standards.

Authorized Enforcement Agency: City of Nixa.

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity: Activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating and demolition.

Director: Means the Director of Public Works of the City of Nixa, Missouri, or the Director’s authorized representative.

Discharge: means any substance disposed, deposited, spilled, poured, injected, seeped, leached, pumped, dumped, leaked, or placed by any means such that it can reasonably be expected to enter, intentionally or unintentionally, into the Waters of the City or Waters of the State, or on any area draining directly or indirectly into the MS4.

Erosion: The wearing away of land due to the action of gravity, wind, water or other mechanical forces.

Hazardous Materials: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential

hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge: Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section 25-116 of this ordinance.

Illicit Connections: An illicit connection is defined as either of the following:

- Any drain or conveyance, whether on the surface or subsurface that allows an illegal discharge to enter the storm drain system including but not limited to any conveyances that allow any non-storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or,
- Any drain or conveyance connected from a commercial or industrial land use to the storm drain system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Land Disturbance Permit: The document issued by Public Works approving the SWPPP and sediment erosion control plan thus authorizing land disturbance activity in accordance with the SWPPP.

Land Disturbance: Any activity that exposes soil including clearing, grubbing, grading, excavating, filling and other related activities.

MS4: Municipal Separate Storm Sewer System.

Municipal Separate Storm Sewer System (MS4): The system of conveyances (including sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, berms, stream beds, open fields, parking lots, impervious surfaces used for parking, man-made channels, or storm drains) owned and operated by the City of Nixa and designed or used for collecting or conveying storm water, and that is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit: A permit issued by EPA (or by the State of Missouri under authority delegated pursuant to 33 USC § 1342 (b)) that authorizes the discharge of pollutants to the waters of the United States, whether the permit is applicable on an individual, group or general area-wide basis.

Non-Storm Water Discharge: Any discharge to the storm drain system that is not composed entirely of storm water.

Person: Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coli form and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing and building or structure; and noxious or offensive matter of any kind.

Premises: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Responsible party: The property owner or person authorized to act on the property owner's behalf; or any person allowing, causing or contributing to a violation of the Code.

Sediment: Mineral or organic matter generated as a result of erosion.

Sediment & Erosion Control Plan: A written plan (including drawings or other graphic representations) that is designed to minimize the accelerated erosion and sediment runoff at a site during construction activities.

Storm Drainage System: Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water: Any surface or shallow subsurface flow, runoff, or drainage consisting entirely of water from rainstorm or frozen precipitation events.

Storm Water Pollution Prevention Plan (SWPPP): A plan developed by a qualified professional engineer or person certified in erosion and sediment control to establish controls to limit erosion and transport of sediment and other pollutants from the site. The plan shall include BMPs in accordance with the City's Technical Specifications, Land Development Code and City code of ordinances.

SWPPP: Storm Water Pollution Prevention Plan.

Wastewater: Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

Watercourse: Any body of water, including, but not limited to lakes, ponds, rivers, streams, and bodies of water which are delineated by the City of Nixa.

Water Quality Standards: The standards, required under the Clean Water Act, which Missouri has adopted to control and remedy water pollution (10 CSR 20-7.031). Water

quality standards have three parts: water used classifications, water quality criteria, and an antidegradation policy.

Waters of the City: Any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, sinkholes, springs, wetlands, wells and channels, and other bodies of surface or subsurface waters, natural or artificial, lying within the boundaries of the City of Nixa, Missouri.

Waters of the State: Any water, surface or underground, lying within the boundaries of the City of Nixa, Missouri over which the Missouri Department of Natural Resources has authority with respect to Clean Water Law.

Section 25-112 SCOPE AND AUTHORITY

This section shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless specifically exempted. The provisions in this section shall be administered and enforced by the Director. The Director shall have the authority to develop and implement procedures, forms, policies, design and construction standards and interpretations for administering the provisions of this section.

Section 25-113 COMPATIBILITY WITH OTHER REGULATIONS

This ordinance is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law. The requirements of this ordinance are in addition to the requirements of any other ordinance, rule, regulation, or other provision of law, and where any provision of this ordinance imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards of human health or environment shall control.

Section 25-114 EROSION AND SEDIMENT CONTROL

The Responsible Party shall control site erosion and the release of sediment and other pollutants resulting from land disturbance activities to the Maximum Extent Practicable (MEP) utilizing Best Management Practices (BMPs). The Responsible Party shall ensure that BMPs are designed, constructed and maintained during land disturbance activities.

Section 25-115 PERMIT REQUIRED

A. PERMIT REQUIRED: A Land Disturbance Permit is required for all land disturbance activity affecting one (1) acre or greater, cumulatively, throughout the duration of the development. The Responsible Party shall obtain a Land Disturbance Permit from the Public Works Director prior to commencing land disturbance activity. A Land Disturbance Permit is not generally required for land disturbance activity of less than one (1) acre, cumulatively, throughout the duration of the development. However, a Land Disturbance Permit may be required if the Director determines that there is significant potential for deposition of sediment that is in violation of this section or the land disturbance activity is within close

proximity to valuable resource waters. Regardless of land disturbance size, a Land Disturbance Permit is required if the land disturbance is located twenty-five feet (25') or less from the boundary of a spring, rim of a sinkhole, cave entrance, wetland, watercourse, stream buffer or one hundred (100) year FEMA identified floodplain. The Director shall provide written notice of the need for a permit to the Responsible Party or person conducting the land disturbance activities. The Responsible Party shall obtain a Land Disturbance Permit from the Public Works Department prior to commencing or resuming land disturbance activity.

B. PERMIT PROCEDURES: The following items must be received prior to issuance of a Land Disturbance Permit:

1. An approved grading, SWPPP, and sediment and erosion control plan.
2. A performance bond or other security.
3. A copy of the General Operating Permit

The submittal and approval procedure is as follows: Subdivisions, Commercial and Other Sites; The sediment and erosion control plan shall be submitted for review along with the plans for the proposed improvements; and Land Disturbance permit for subdivisions will be issued by the Director after approval of the plans for the subdivision improvements.

C. PLAN REQUIREMENTS: Plans must be prepared by and bear the seal of an engineer registered to practice in the State of Missouri.

Plan requirements are set forth in the Stormwater Planning and Design Section (page 123) and in this Section.

Plans will not be required in the following cases:

1. Grading associated solely with a single family residence and which is exempt from the permit requirement except as provided in Section 25-115
2. Grading or filling of less than 1 acre if located outside of allowable building areas and not located within 25 feet of a spring, sinkhole, wetland, or watercourse.

In these instances, a Land Disturbance permit can be issued following an inspection of the site by a representative of the Planning Department if it does not reveal any conditions which would warrant preparation of a detailed plan in the opinion of the Planning Department.

D. SECURITY REQUIREMENTS: Upon approval of the Land Disturbance Permit and prior to issuance of a Land Disturbance Permit, the Public Works Department shall require the developer to post a security in the form of a cash bond, cash or equivalent approved by the Director of Finance of not less than 150% of the value of all work to be done under the grading plan and SWPPP. For land disturbance permits which do not include the construction of public improvements related to subdividing land under the jurisdiction of the Subdivision Regulations, chapter 23 of the Nixa City code, or construction of permanent building or structures, under jurisdiction of the Land Development Code, chapter 23, (i.e. where only grading work is included, such as a

borrow pit or pond) the only type of security which will be accepted will be a cash bond. If the bond, letter or credit or other security document is placed in default, or the insurance is terminated or not maintained at a satisfactory level, then no further permits or approvals, including building permits, shall be issued for the developer's property located in the development for which the security was given, until the improvements are completed to the satisfaction of the City. Any portion of the deposit not expended or retained by the City hereunder shall be refunded when the land disturbance is completed and the soil and drainage conditions are stabilized to the satisfaction of the City.

Section 25-116 Work Exempt from Permit

A Land Disturbance Permit shall not be required in the following instances, provided that no change in drainage patterns or sedimentation onto adjacent properties will occur:

1. Grading of land for farming;
2. Nurseries;
3. Gardening or similar agricultural or horticultural use; and
4. Grading activities in quarries and permitted sanitary landfills.

No Land Disturbance Permit is required for the following activities, provided they are less than one (1) acre of cumulative land disturbance, are not located within twenty-five feet (25') of the boundary of a spring, rim of a sinkhole, cave entrance, wetland, watercourse, stream buffer or one hundred (100) year FEMA identified floodplain and do not cause a violation of the Missouri Clean Water Law or Water Quality Standards:

1. Grading and repair of existing roads or driveways;
2. Cleaning and routine maintenance of roadside ditches or utilities;
3. Utility construction where the width of the disturbed area for trench excavation and backfill is twenty feet (20') or less;
4. Emergency construction required to repair or replace roads, utilities, or other items affecting the general safety and well being of the public; and
5. Land disturbance for single family residences not part of an overall subdivision plan.

For emergency construction activities which would otherwise be required to obtain a permit and for which remedial construction will take more than fourteen (14) calendar days, application for the Land Disturbance Permit must be made within three (3) calendar days from the start of construction.

Section 25-117 General Design Guidelines.

The following items must be considered in preparing a sediment and erosion control plan.

A. TEMPORARY vs. PERMANENT CONTROLS: The greatest potential for soil erosion occurs during construction. Temporary controls are those which are provided for the purpose of controlling erosion and containing sediment until construction is completed.

Temporary controls include straw or hay bale dikes, silt fences, erosion control blankets etc., which are not needed after the area is stabilized.

Permanent controls consist of riprap, concrete trickle channels, detention basins, etc., which will remain in place through the life of the development.

It is possible for the same facility to serve both a temporary and permanent purpose. The difference between temporary and permanent erosion control should be clearly recognized in preparing a sediment and erosion control plan.

B. SHEET FLOW vs. CONCENTRATED FLOW: In areas where runoff occurs primarily as sheet flow, containment of sediment is relatively simple. In these areas straw or hay bales, silt fences and vegetative filter areas can be very effective.

Where concentrations of flow occur, containment of sediment becomes more difficult as the rate and volume of flow increases. In these areas more sophisticated controls such as sedimentation basins must be provided.

C. SLOPE: Control of erosion becomes progressively more difficult as the slope of the ground increases. Areas with steeply sloping topography, and cut and fill slopes must be given special consideration.

D. SOILS AND GEOLOGIC SETTING:

Area soils and the geologic setting must be considered in preparing the plan and any special considerations deemed necessary for a particular site provided.

E. ENVIRONMENTALLY SENSITIVE AREAS: Where construction occurs within the vicinity of permanent streams, springs, sinkholes, lakes or wetland, special attention must be given to preventing discharge of sediment.

Section 25-118 Design Standards and Criteria.

A. GRADING:

1. Maximum Grades: Cut or fill slopes shall not exceed 3:1; 4:1 slopes are preferred where possible.
2. Maximum Height: Cut or fill slopes shall not exceed 15 feet in vertical height unless a horizontal bench area at least 5 feet in width is provided for each 15 feet in vertical height.
3. Minimum Slope: Slope in grassed areas shall not be less than 1 percent.
4. Construction Specifications: Construction for streets must comply with specifications set forth by the City of Nixa Planning Department.

For all other areas, construction specifications stating requirements for stripping, materials, subgrade compaction, placement of fills, moisture and density control,

preparation and maintenance of subgrade must be included or referenced on the plans, or accompanying specifications submitted.

5. Spoil Areas: Broken concrete, asphalt and other spoil materials may not be buried in fills within proposed building or pavement areas. Outside of proposed building and pavement areas, broken concrete or stone may be buried in fills, provided it is covered by a minimum of 2 feet of earth. Burying of other materials in fills is prohibited.
6. Stockpile Access: Location of proposed stockpile areas shall be outlined on the plans, and specifications for proper drainage included.
7. Borrow Areas: The proposed limits of temporary borrow areas shall be outlined in the plans and a proposed operating plan described on the grading plan. Temporary slopes in borrow areas may exceed the maximums set forth above. At the time that borrows operations are completed, the area shall be graded in accordance with the criteria set forth above, and reseeded.

B. SEDIMENT CONTAINMENT:

1. Existing Vegetative Filter Area: Existing vegetative filter areas may be used where:
 - Unconcentrated sheet flow occurs;
 - An area of existing vegetation a minimum of 25 feet in width can be maintained between the area to be graded and a property line, watercourse, sinkhole, spring, wetland or classified lake;
 - Existing ground slope is no greater than 5:1 (20 percent);
 - The existing vegetative growth is of sufficient density and in sufficiently good condition to provide for filtration of sediment.
2. Containment areas constructed of hay or straw bales, or silt fence may be provided in areas where:
 - Unconcentrated sheet flow occurs;
 - An area of existing vegetation, a minimum of 25 feet in width cannot be maintained between the area to be graded and a property line, watercourse, sinkhole, spring, wetland or classified lake;
 - Existing ground slope is no greater than 5:1 (20 percent);
 - Concentration flow from an area no greater than 1 acre occurs and a minimum volume of 100 cubic feet per acre is contained behind the dike.
 - Either cereal grain straw or hay may be used for bale dikes. Straw/hay bale dikes shall be constructed as shown in Drawing G-17.
 - Silt fence may be used in lieu of hay or straw bales. Silt fence shall be constructed as shown in Drawing G-17.
 - Straw/hay bale dikes and silt fences are temporary practices.
3. Temporary Containment Berms: Temporary containment berms may be provided for areas where concentrated flow from areas greater than 1 acre and less than 5 acres occurs. Temporary containment berms must contain a volume of 1000 cubic feet per acre of drainage area.

Temporary containment berms shall have a riprap outlet with a sediment filter as shown in Drawing G-16, or a perforated pipe outlet as shown in Drawing G-19.

Details for temporary containment berms are shown in Drawing G-7 and G-14

Temporary containment berms and accumulated sediment may be completely removed after the tributary area is stabilized, and must be removed prior to final acceptance and release of escrow.

4. Sedimentation Basin: Sediment basins shall be provided for all areas where concentrated flow occurs from an area of 5 or more acres. Sediment basins shall be designed to detain the runoff from 1 inch of rainfall, for a period of at least 24 hours. Runoff shall be calculated using the methods contained in Chapter 2 of TR-55 (Reference 11), using the recommended curve number for newly graded areas from Table 2-2a.

Note: For construction sites in Nixa, an average value of runoff volume from 1 inch of rainfall is approximately 1000 cubic feet per acre, using a curve number of 90, as indicative of a Type B & C soils. This value may be used in sizing sediment basins or the runoff volume determined using the values from Figure 2-1 of TR-55.

- a. Sediment basins shall be provided with: an outflow structure consisting of:
 - A flow restriction device which provides for the required detention time,
 - An outfall pipe sized to carry the maximum estimated outflow rate,
 - protective structures at the pipe outlet to prevent crushing or damage of the end of the pipe,
 - Protective structures to prevent blockage of the pipe with debris,
 - Erosion protection at the pipe outlet.
 - A typical outlet structure is show in Drawing G-7 and G-14.
- b. An overflow spillway capable of discharging the peak flow rate for the annual 4% annual probability (25-year) storm while maintaining a minimum freeboard of 1 foot.

Overflow spillways may be sodded where the depth of flow at the crest is limited to no greater than 6" and outlet channel velocities do not exceed 5 feet per second for the minor (5- year) storm.

Overflow spillways not meeting these restrictions must be constructed of riprap, concrete or other approved, non-erodible material.

C. EROSION PROTECTION:

1. Seeding and Mulching: (Also see "Seeding" in this Chapter)
 - a. Permanent Seeding: Permanent seeding fertilizer and mulch shall be applied at the rate set forth in Drawing G-1 or according to other specifications which are

approved with the Grading Permit. Permanent seeding seasons are from March 1 to May 15, and August 15 to October 15.

- b. Mulching: Where slopes are less than 4:1, cereal grain mulch is required at the rate of 100 pounds per 1000 square feet (4500 pounds per acre). Cereal grain mulch shall meet the requirements of Section 802 of the State Specifications (Reference 17) for Type 1 mulch.

Where slopes are 4:1 or greater Type 3 mulch ("hydromulch") meeting the requirements of Section 802 of the State Specifications (Reference 17) shall be used.

- c. Temporary Seeding: Whenever grading operations are suspended for more than 30 calendar days between permanent grass or seeding periods all disturbed areas must be reseeded with temporary cover according to Drawing G-1. Temporary seeding season runs from May 15 to November 15.

- d. Overseeding: During the winter season (November 15 to March 1) temporary seed and mulch shall be placed on all completed areas or areas where grading is suspended for more than 30 days. During this period seed, mulch and soil amendments shall be applied at the following rates:

Lime: 100% of specified quantity.*
Fertilizer: 75% of specified quantity.
Seed: 50% of specified quantity.
Mulch: 100% of specified quantity.

* Per Drawing G-1

- e. Maintenance: Seeded areas must be maintained for one year following seeding.

2. Cut and Fill Slopes: Cut and fill slopes shall be protected from erosion by construction of straw bale dikes, silt fences, diversion berms, or swales along the top of the slope.

Where drainage must be carried down the slopes, pipe drains, concrete flumes, riprap chutes, or other impervious areas must be provided. Suitable erosion control measures such as riprap stilling basins, must be provided at the bottom of the slope.

Diversions shall be maintained until permanent growth is firmly established on the slopes.

Typical diversion details are shown in Drawing G-8. Riprap chute details are shown in Drawing G-12.

3. Channels and Swales: Permanent channels and swales shall be provided with a stabilized invert consisting of one of the following materials:

- a. Sod: Where the average velocity of flow is 5 feet per second or less and there is no base flow, the channel shall be lined with sod.

For channels with a bottom width less than 15 feet, sod shall extend up the side slope to a minimum height of 6" above the toe. (Drawing G-13)
Channels with a bottom width of 15 feet or greater, shall be graded as shown in Drawing G-13 and a low flow area, 15 feet in width lined with sod.

The remainder of the channel slopes shall be seeded and mulched as provided above.

- b. Erosion Control Blanket: Commercial erosion control blankets may be used in lieu of sod provided that samples are submitted and approved by the City Planner. The guaranteed maintenance period shall be one year.
- c. Non-erosive lining: In grass channels where base flow occurs, a non-erosive low-flow channel of riprap or concrete must be provided. Low flow channels shall have a minimum capacity of 5 cubic feet per second. Other suitable non-erosive materials may be specified with approval of the City Planner.

For channels which have an average velocity of 5 feet per second or greater a non-erosive lining of riprap concrete or other approved material must be provided.

- 4. Storm Sewer and Culvert Outlets: Erosion protection shall be provided at storm sewer and culvert outlets. Minimum erosion protection shall consist of a concrete toe wall and non-erosive lining.

Flared end sections and headwalls are not required, but may be provided at the discretion of the designer to meet grading or aesthetic requirements. The required length of non-erosive lining will not be decreased where flared end sections or headwalls are provided unless calculations and data to support the decrease in length are submitted and approved. Non-erosive lining shall consist of riprap, unless otherwise specified and approved. Field stone, gabions, or Riprap shall extend to the point at which average channel velocity for the peak flow rate from the minor (5-year) storm has decreased to 5 feet per second maximum

The length of riprap to be provided shall be as follows. (See Drawing G-18)

Average outlet velocity less than 5 feet per second: $L = 3$ times the pipe diameter or culvert width.

Average outlet velocity less than 5-10 feet per second: $L =$ length determined using Drawing G-18.

Average outlet velocity greater than 10 feet per second: Use MHTD standard energy dissipater headwall. (Reference 17)

The height of erosion protection shall be as shown in Drawing G-18. Minimum toe wall dimensions are shown in Drawing G-18. Where headwalls or flared end sections are specified, toe-walls must be provided at the downstream end.

- 5. Curb Openings: Where drainage flows from paved areas to grass areas through curb openings erosion protection shall be provided as shown in Drawing G-20.

6. Ditch Checks and Drop Structures: In grass channels, grades and velocities may be controlled by use of ditch checks and drop structures.
Riprap ditch checks may be required in natural channels where average velocity for the peak flow rate from the minor storm exceeds 5 feet per second for post-development conditions.
 7. Spillways: Erosion protection must be provided at spillways and outlet structures for detention ponds. Erosion protection shall extend to the point where flow has stabilized and average velocity in the outlet channel is 5 feet per second or less.
- D. **TEMPORARY VEHICLE TRACKING PAD**: A minimum of one temporary vehicle tracking pad is required at each site. Additional tracking pad's may be provided if approved. The location of each tracking pad shall be shown on the plan. Only tracking pads designated on the sediment and erosion control plan may be used. Barricades shall be maintained if necessary to prevent access at other points until construction is complete.
- Temporary Vehicle Tracking Pad's shall be constructed of crushed limestone meeting the following specifications.
- Temporary vehicle tracking pad's shall be a minimum of 25 feet wide and 50 feet long.
 - Minimum thickness of crushed limestone surface shall be 2" to 4" inch diameter rock (rocks 6" and larger shall be avoided because they can become lodged between dual tires on trucks) is to be used, with a minimum thickness of 12 inches. Additional 2 inch lifts of crushed limestone shall be added at the discretion of the City if the surface of the initial drive deteriorates or becomes too muddy to be effective.
- E. **CLEANING STREETS**: Streets both interior and adjacent to the site shall be completely cleaned of sediment at the end of construction and prior to release of security.
- F. **DUST CONTROL**: The contractor will be required to use water trucks to water haul roads and construction areas to minimize dust leaving the site when conditions warrant.
- G. **SEQUENCING AND SCHEDULING**: Costs of sediment and erosion control can be minimized if proper consideration is given to sequencing and scheduling construction.

Any special sequencing and scheduling considerations should be noted in the grading plan.

A detailed schedule must be received from the contractor at the Pre-Construction Conference.

Section 25-119: INSPECTION

- A. By submitting a Land Disturbance permit the applicant consents to inspections of the proposed development site and all work in progress. The Director shall be allowed to enter the property of the responsible party as deemed necessary to make regular inspections.
- B. A copy of the Land Disturbance permit and SWPPP must be available on site for inspection by the Director.
- C. The Director shall make inspections as hereinafter required in Subsection D and shall either approve that portion of the work completed or shall notify the Responsible Party wherein the work fails to comply with the plan as approved.
- D. In order to obtain required inspections, the responsible party shall notify the Director at least two (2) working days before the following required inspections:
 - 1. Initial erosion and sediment control measures placement.
 - 2. Site Clearing.
 - 3. Rough Grading.
 - 4. Removal or substantial modification of any erosion and sediment control measure or practice.
 - 5. Final landscaping.
- E. The Responsible Party shall provide a qualified inspector to conduct inspections on a weekly basis or within forty-eight (48) hours of a half inch (1/2") or greater rain event. The log of such inspections shall be maintained on site and available for review by the City upon request. Prior to final acceptance of the project a copy of the inspection log must be provided to the Director for permanent record.
- F. The purpose of inspections will be to determine the overall effectiveness of the SWPPP plan and shall be used to identify the need for additional control measures. The need for changes to the plan as identified by the inspections shall be provided to the Responsible Party in writing.
- G. In the event work does not conform to the permit or conditions of approval or to the approved plan or to any instruction of the Director, notice to comply shall be given to the Responsible Party in writing. After a notice to comply is given, the Responsible Party shall be required to make the corrections within the time period

determined by the Director. If an imminent hazard exists, the Director shall require that the corrective work begin immediately.

Section 25-120 ENFORCEMENT AND PENALTIES

A. Stop-Work Order; Revocation of Permit

1. In the event that the Responsible Party holding a Land Disturbance Permit pursuant to this ordinance violates the terms of the permit, or implements site development in such a manner as to materially adversely affect the health, safety, welfare, or safety of persons residing or working in the neighborhood or development site, the Director may suspend or revoke the Land Disturbance Permit and issue a stop-work order.
2. For the purpose of this ordinance, a stop work order is validly posted by posting a copy of the stop work order on the site of the land disturbance activity in reasonable proximity to a location where the land disturbance activity is taking place. A copy of the order, in the case of work for which there is a permit, shall be mailed to the address listed by the Responsible Party on the permit. In the case of work for which there is no permit, a copy of the order shall be mailed to the person listed as the owner of the property on the tax records of Christian County Missouri.
3. No person is permitted to continue or permit the continuance of work in an area covered by a stop work order, except work required to correct deficiencies with respect to an erosion or sediment control measure and as authorized by the Director.
4. Forty-eight (48) hours after posting a stop work order, the Director, if the conditions specified in the stop work order to resume work have not been satisfied, may issue a notice to the Responsible Party that the City of Nixa will perform work necessary to comply with this regulation. The City of Nixa may go on the land and commence work after forty-eight (48) hours from issuing the notice of intent. The costs incurred by the City of Nixa to perform this work shall be charged against the performance security.

B. Violation and Penalties

1. No Responsible Party, owner, or land user shall construct, enlarge, alter, repair, or maintain any grading, excavation, or fill, or cause the same to be done, contrary to or in violation of the terms of this ordinance.
2. Any Responsible Party, owner or land user violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof, shall be fined not more than one thousand dollars (\$500.00) for each offense, and each day during which any violation of any of the provisions of this ordinance is committed, continued or permitted, shall constitute a separate offense.
3. Any waiver of a violation of this ordinance by the Director shall not be deemed or construed by the Responsible Party to constitute a waiver of any prior or succeeding violation of this ordinance.
4. The City Attorney may seek any appropriate remedy to cause the removal of such sediment including, but not limited to, an injunction, revocation proceedings or any and all permits, licenses, and termination of utility services.

Section 25-121 DISCHARGE PROHIBITIONS

- A. Prohibition of Illegal Discharges: No person shall throw, drain, or otherwise discharge, cause, or allow others under its control to throw, drain, or otherwise discharge into the MS4 any pollutants or waters containing any pollutants, other than storm water.

The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

1. The following discharges are exempt from discharge prohibitions established by this ordinance: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl spaces pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water.
2. Discharges or flow from firefighting, and other discharges specified in writing by the City of Nixa as being necessary to protect public health and safety.
3. Discharges associated with dye testing, however this activity requires a verbal notification to the City of Nixa Public Works Director prior to the time of the test.
4. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the United States Environmental Protection Agency (EPA), provided that the discharger is in full compliance with all

requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

B. Prohibition of Illicit Connections:

1. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
2. 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.
3. A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.
4. Improper connections in violation of this ordinance must be disconnected and redirected, if necessary, to an approved onsite wastewater management system or the sanitary sewer system upon approval of the City of Nixa.
5. Any drain or conveyance that has not been documented in plans, maps or equivalent, and which may be connected to the storm sewer system, shall be located by the owner or occupant of that property upon receipt of written notice of violation from the City of Nixa Public Works Director requiring that such locating be completed. Such notice will specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm sewer system, sanitary sewer system or other discharge point be identified. Results of these investigations are to be documented and provided to the City of Nixa Public Works Director.

This ordinance shall be in full force and effect from and after the date of passage.

READ TWO (2) TIMES AND PASSED BY THE BOARD OF ALDERMEN FOR THE CITY OF NIXA, MISSOURI THIS 9TH DAY OF FEBRUARY, 2009.

PRESIDING OFFICER

ATTEST: