CITY OF POPLAR BLUFF
STORM WATER MANAGEMENT PROGRAM UPDATE
JANUARY 2019

SUBMITTED TO:
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

PREPARED FOR:
THE MAYOR AND CITY COUNCIL
OF THE CITY OF POPLAR BLUFF, MISSOURI

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City of POPLAR BLUFF

TABLE OF CONTENTS

1.0 PERMIT AREA CHARACTERISTICS 1
1.1 CITY OF POPLAR BLUFF DESCRIPTION 1
1.2 LAND USE CHARACTERISTICS 1
1.3 TOPOGRAPHY 1
1.4 CLIMATE 2
1.5 LOCAL WATERSHEDS AND BODIES OF WATER 2
1.6 STORM WATER CONVEYANCE SYSTEM 2
1.7 SANITARY SEWER SYSTEM 3
1.8 WATER QUALITY 3
2.0 – PROGRAM MANAGEMENT 5
2.1 REGULATORY BACKGROUND 5
2.2 MANAGEMENT STRUCTURE 5
3.0 LOCAL IMPLEMENTATION PLAN 6
3.1 ORGANIZATION 6
3.2 WORK PLAN 6
3.3 PUBLIC EDUCATION AND OUTREACH 7
3.4 PUBLIC PARTICIPATION AND INVOLVEMENT 8
3.5 ILLICIT DISCHARGE DETECTION AND ELIMINATION 9
3.6 CONSTRUCTION SITE STORM WATER RUNOFF CONTROL 11
3.7 POST-CONSTRUCTION STORM WATER MANAGEMENT 12
3.8 POLLUTION PREVENTION/GOOD HOUSEKEEPING 12
4.0 SCHEDULE OF IMPLEMENTATION 14
5.0 MONITORING, RECORDKEEPING, AND REPORTING 18
6.0 FUNDING ISSUES 18
7.0 CONCLUSION 18

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

Table 1.0 IMPAIRED WATER BODIES

TABLE 2.0 - 5-YEAR BMP IMPLEMENTATION SCHEDULE

LIST OF FIGURES

FIGURE 1 VICINITY MAP

FIGURE 2 TOPOGRAPHIC MAP

FIGURE 3 WATERSHED MAP

FIGURE 4 RIVERS AND STREAMS

FIGURE 5 FLOOD HAZARD MAP

FIGURE 6 CONTROL MEASURES

LIST OF EXHIBITS

EXHIBIT 1 – OUTLET INFORMATION

EXHIBIT 2 – MDNR NPDES MS4 GENERAL PERMIT

EXHIBIT 3 –STORMWATER ORDINANCE

EXHIBIT 4 – CITY ORGANIZATIONAL CHART

1.0 PERMIT AREA CHARACTERISTICS

1.1 CITY OF POPLAR BLUFF DESCRIPTION

The City of Poplar Bluff is situated at the junction of US Highways 60 and 67 in the heart of Butler County, Missouri, serving as the County Seat. According to the 2010 United States Census, the population of Poplar Bluff is 17,023 persons. The City of Poplar Bluff Small MS4 operates under the authority of Missouri Operating Permit MOR040027.

The City of Poplar Bluff is a third-class city that operates under a Council – City Manager form of government. The City Council is comprised of seven elected council members, five representing separate wards of the city and two serving the city at-large. From these seven council members a Mayor and Mayor Pro-Tem are elected. Council members are elected for three-year terms. The City Council appoints a City Manager to oversee the day-to-day operations of the City.

1.2 LAND USE CHARACTERISTICS

The City of Poplar Bluff contains approximately 6,315 acres of land; 70% of which is zoned for residential use, 58% is zoned for single-family use, 6.7% duplexes and 4.8% for multi-family use according to the City's 2007 Comprehensive Plan. Today there are approximately 885 acres that fall within one of the City's three commercial zoning districts, representing approximately 14% of the City's total land mass. The City's industrial zoned areas consist of approximately 1,075 acres and make up 17% of the city's land area.

1.3 TOPOGRAPHY

Poplar Bluff is located at the convergence of two environmental zones, the Ozark Foothills and Mississippi Alluvial Valley. Both environmental areas consist of a variety of rich soils. Soils in the higher elevations are composed of rich clayey loam with underlying sand or gravelly clay. The surrounding swamplands, drained during the 19th century, consist of heavier clays composed of a sandy loam and alluvial soils rich in organic materials and well suited for agricultural use. Some of the largest trees in the region grew out of the fertile lowlands of the Black and St. Francis rivers, nourished by centuries of nutrient rich flood deposits and sedimentation. The natural swamps in the low-lying areas produced enormous cypress, water tupelo, while the higher grounds of the Ozark Foothills grew massive oaks, ash and other hardwoods such as Poplar, for which the city gained its namesake.

These two types of landforms continue to present challenges and opportunities with respect to land use & development. East of the Black River is a vast floodplain and the swampy lowlands of the Mississippi Alluvial Valley. The elevations in this area are between 320-340 feet above sea level. The low-lying flat lands are poorly drained and prone to flooding, but flat and otherwise easily accessible by rail and road. Due to these reasons, and the fact they attract huge concentrations of mosquitoes, they are better suited for agricultural and industrial uses rather than residential and commercial uses. West of the Black River are the rocky soils and hilly terrain known as the Ozark Foothills. This area is characterized by gently rolling topography drained by small streams, which have cut "V" shaped valleys creating steep slopes in some areas. The Ozark Foothills in this area range in elevation from 340 feet to 580 feet above sea level, with

the largest changes in elevation occurring along the major stream channels that flow through Poplar Bluff. The Ozark Foothills provide stable soils that are not prone to flooding. These areas are also further from the rail lines and other industrialized areas, yet still easily connected to the downtown and the local schools and parks Therefore, the Ozark Foothill area is better suited for residential and commercial use.

Excessive or steep slopes, such as those located in the Ozark Foothills, are a factor in many environmental problems and can significantly increase the vulnerability of land to damage from human activities. The potential for erosion and resulting sedimentation due to clearing increases as the slope increases. Generally, land with a slope of less than five (5) percent is considered moderately sloping and is capable of accommodating most types of development activities. Slopes exceeding 15 percent (15 feet of vertical change per 100 feet of horizontal distance) presents a major development constraint and are unsuitable for intensive development. Steep slopes also pose a problem for septic tank filtration systems, causing health and aesthetic problems. Therefore, slope is an important factor to consider when evaluating the relative suitability of vacant land for future development. Steep slope areas are often economically unfeasible due to the high costs to install public infrastructure and expensive construction techniques required. Therefore, this plan recommends future growth in areas with low to moderate slopes that support more economical development and conventional construction practices.

1.4 CLIMATE

The City of Poplar Bluff's climate is characterized by hot, humid summers and mild to cool winters. There are significant temperature differences with the warmest month occurring in July with an average high of 89 degrees and the coolest month in January with an average high of 39 degrees. Precipitation is well-distributed through out the year with an average annual rainfall of 46.8 inches.

1.5 LOCAL WATERSHEDS AND BODIES OF WATER

The river channel of the Black River cuts through the city limits of Poplar Bluff, along with several creeks including the largest, Pike Creek. The City falls within the Upper Black River Watershed that stretches from northern Reynolds County through Butler County to the Arkansas state line.

1.6 STORM WATER CONVEYANCE SYSTEM

The City of Poplar Bluff's storm water conveyance system is separate from the City's sanitary sewer system. The City's storm water system consists of both natural and man-made structures. Included within the system ae curb and gutter, storm drains, storm pipes, box culverts, detention basins, ditches, and streams.

Currently there are no accurate maps of the storm water conveyance system or no accurate count of inlets. As part of the Minimum Control Measures #3, Illicit Discharge Detection and Elimination, the City has included an activity to map the storm water conveyance system over the course of several years. This will also include inlets and detention basins.

Runoff from the City crosses the city limits at seventeen (17) separate locations as shown on Exhibit 1, entitled Storm Water Outlets. Drainage throughout the City consists of a combination of creeks, ditches, culverts, underground storm sewer systems, floodgates and storm water pumps. The majority of the older portions of the City, and the low-lying areas drain though systems of ditches and culverts. Some of these areas have been enhanced throughout the years to eliminate flooding problems and reduce health and public safety risks associated with deep ditches.

Much of the drainage in the old downtown area consists of storm water inlets and underground storm sewers, which transport water out of the City and into Black River. The Relief Street/Valley Street drainage system consists of various types and sizes of collection pipes, numerous drop inlets and area drains, and a flood gate and lift station. The flood gate and lift station prevent rising flood waters of Black River from flooding the area while expelling runoff from within the drainage basin.

Since October of 1990, the City of Poplar Bluff has been requiring storm water management on new development and redevelopment projects within the City. In 2003, the City revised the Storm Water Management Ordinance to prohibit illicit discharge and establish enforcement procedures. Storm water detention has been the main method of storm water management required.

1.7 SANITARY SEWER SYSTEM

The City's sanitary sewer system is operated by the Municipal Utilities Department. The system has a four-cell aerated lagoon treatment plant with a capacity well over three million gallons per day. The system is comprised of 24 collection basins and 3,600 manholes. The collection system is comprised of cured in place, clay, ductile iron, PVC, reinforced concrete pipe and truss pipe.

1.8 WATER QUALITY

The City of Poplar Bluff has four streams/rivers that are listed on the State of Missouri's List of Impaired Waters, or Section 303(d) of the Clean Water Act. These include the Black River, Craven Ditch, Main Ditch, and Pike Creek.

Table 1.0 Impaired Water Bodies

Impaired Water Bodies					
Year	**Name**	**Impairment Size**	**Unit**	**Pollutant**	**Source**
2002	Black River	47.10	Miles	Mercury in Fish	Atmospheric Deposition
2012	Cravens Ditch	11.60	Miles	Oxygen,	Unknown

				Dissolved	
2006	Main Ditch	13	Miles	pH; Water Temp	Poplar Bluff WWTP Channelization
2010	Pike Creek	6	Miles	Oxygen, Dissolved	Unknown

2.0 – PROGRAM MANAGEMENT

2.1 REGULATORY BACKGROUND

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). The regulation of polluted discharges from urban runoff produced by these large to medium MS4's became a primary goal. The National Pollutant Discharge Elimination System (NPDES) program requires municipalities that discharge pollutants into waters of the United States to obtain an MS4 permit.

The City of Poplar Bluff is a Phase II Small MS4 covered by a general permit that regulates facilities within the city limits of Poplar Bluff. The Missouri Department of Natural Resources issued Permit # MOR040027 to the City of Poplar Bluff. This issued permit requires a Storm Water Management Plan (SWMP) that is to be evaluated and updated on a continuing basis and must adhere to the provisions of 40 CFR 122.34.

The goal of the SWMP is to educate the public along with targeted audiences described within this plan of the issues related to storm water runoff. The Plan shall be written to meet all six control measures determined by the governing state and federal regulations. The City's ultimate goal is to reduce the quantity of storm water runoff, while improving the quality of runoff.

2.2 MANAGEMENT STRUCTURE

Existing Storm Water Management is handled by the Planning Department. Current activities include reviewing site-specific storm water management plans for both new development and re-development projects within the City, and inspection of construction sites and existing facilities. Storm water drainage systems are managed and maintained by the City Street Department.

The implementation of the updated SWMP will require additional program management, and possibly restructuring of the City's storm water management program. Evaluation and possible modification of the management organizational structure is one of the first steps in implementing this updated SWMP. Program management will continue to be the responsibility of the Planning Department, but will require a greater amount of coordination and assistance from all City departments.

3.0 LOCAL IMPLEMENTATION PLAN

3.1 ORGANIZATION

Each program element or control measure of the Storm Water Management Program contains Best Management Practices (BMP's). Some of these BMP's are directly related to other elements of the SWMP. Figure entitled "SWMP Control Measures", shows a summary schematic of the six control measures and their respective BMP's. The following is a detailed discussion of the BMP's for each of the six program elements and how they will be monitored and evaluated. The primary contact for each of the following program implementations will be Matt Winters, City Planner and/or Tony Chilton, City Inspector.

3.2 WORK PLAN

This document presents the updated Storm Water Management Program (SWMP) for the City of Poplar Bluff. This SWMP is part of the Phase II Storm Water requirements of the Missouri Department of Natural Resources (MDNR) Water Pollution Control Program and the Environmental Protection Agency (EPA). The MDNR application forms K & M for a Small Municipal Separate Storm Sewer System (MS4) Permit and the SWMP layout the City's steps to comply with these requirements. This SWMP details the six (6) minimum control measures that will be taken by the City of Poplar Bluff for the permit period of the years 2016 through 2021. The six minimum control measures are outlined as follows:

1. Public Education and Outreach on Storm Water Impacts
2. Public Involvement/Participation.
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Runoff Control
5. Post-Construction Storm Water Management in New Development and Redevelopment
6. Pollution Prevention/Good Housekeeping for Municipal Operations

The sections that follow discuss program management. A table of implementation schedules for each of the six control measures is included in section 3.0. Monitoring, recordkeeping, and reporting procedures are described in section 5.0 and funding issues are discussed in section 6.0. The content of this report provides the foundation for developing and evolving the City of Poplar Bluff's Storm Water Management Program in this permit term.

The City's desire is to target a variety of segments within the City that could potentially impact storm water quality. These groups will be targeted as their behaviors could have a significant impact on target pollutants. The groups that will be targeted are:

- Citizens/Homeowners/Renters
- Local Business Owners
- Developers and Home Builders
- Children/Youth

- City Staff
- Elected Officials

The following is a list of targeted pollutants that could impact the quality of storm water runoff in the City of Poplar Bluff:

- Construction activities
- Over application of fertilizer, herbicides, pesticides
- Pet Waste
- Improper disposal of paint or other household hazardous chemicals
- Improper disposal of waste oil, gasoline, or grease
- Snow removal and ice melt products used by the City street department and MoDOT
- Stream bank erosion
- Inflow and Infiltration issues with city's sanitary sewer system
- Spills from motor vehicle accidents
- Large, connected impervious areas such as parking lots at shopping centers, hospitals, schools, etc
- Detergents washed into storm drains

3.3 PUBLIC EDUCATION AND OUTREACH

The goal of the Public Education and Outreach portion of the program is to raise awareness of storm water pollution prevention by educating people about the storm water system and its effects on health and the environment. Currently the City is promoting storm water issues though educating those applying for storm water management permits and enforcement of the revised Storm Water Management Ordinance. Public awareness has been high due to a recent influx of development within the community, federal buy out of properties located in the flood prone areas, and recent large intensity rainfall events. The SWMP during this permit term will target general understanding and awareness of storm water issues in an effort to create a more informed public. Specifically, the City would like the SWMP and education to target sediment runoff from construction as the primary pollution of concern. The primary sediment from these sites are in the form of suspended solids and nutrients (typically from fertilizers).

Development of Best Management Practices (BMP's) for this element of the program will take place throughout this permit term. The City is continuing to develop budgets, procedures, and responsibilities for departments to handle BMP's for this and most of the program. The following are best management practices that will be evaluated for implementation during this permit term.

1. Materials will be developed for each target audience listed above. Materials will cover such topics as causes of storm water pollution, steps to reduce storm water pollution, and guidance regarding the City's storm water ordinances. It is expected that <u>four (4)</u> sets of materials will be developed per year.

2. As the above referenced educational materials are developed, they will be shared with local citizens through the City's social media outlet that include Facebook and Twitter,

this will be done quarterly each year. It is estimated based on past numbers of viewers of social media posts that these posts will reach an average of 800 persons. Annually, materials will be included with local utility bills, reaching all households in Poplar Bluff, currently 7,181 total households. Educational materials will also be distributed as building permits are issued. The City averages 225 building permits issued per year, and anticipates that 50 contractors and/or developers will receive the educational materials through this means.

3. Educational materials will be added to the City's website to be always available to the public. The City's website averages 3,600 visits per month. It is estimated that at least one of the developed educational materials will be downloaded per month, totaling 12 downloads per year.

4. The City will work with the local newspaper, the Daily American Republic to publish one newspaper article per year.

5. The Poplar Bluff Parks and Recreation Department will continue to maintain Pet Waste Stations within the City parks and greenway trails. As new trails are constructed, more pet waste stations will be added as needed. Downtown Poplar Bluff will also continue to maintain the pet waste station that is located at the dog park in downtown Poplar Bluff. A map will be developed noting the locations of the stations throughout the City. There are currently six (6) located throughout the city with anticipation of three (3) over the course of this permit period.

Measurement of these BMP's will be based on the number of individuals participating in each of the targeted activities. Frequency of the sharing of material on social media sites and updates to the city's website will be measured as well as the public viewing of each.

Measurement of these BMP's will be based on performance and effectiveness. The goal of the program over the permit term is to reach the entire City population or around 17,000 people. Performance measures for media campaigns will be based on the number of people reached and the frequency of the message. Effectiveness measures will be based on public feedback through correspondence, web page responses through e-mail, and possibly public surveys. Measurement of activities such as seminars will be done in a similar manner, by measuring the number of people in attendance, and the response of attendees. Again, a public survey may be used to help measure response.

3.4 PUBLIC PARTICIPATION AND INVOLVEMENT

The goal of the Public Participation and Involvement portion of the SWMP is to improve water quality and the success of the City in eliminating illicit discharges through the direct participation of the general public. The success of this program element is largely dependent on public awareness and the creation of platforms for public participation within the program and planning process. The City seeks public input for new policies and procedures, these include preliminary and final plats, rezoning requests, annexation requests, and comprehensive plans.

Development of Best Management Practices (BMP's) for this element of the program will take place throughout this permit term. The City is continuing to develop budgets, procedures, and

responsibilities for departments to handle BMP's for this and most of the program. The following are best management practices that will be evaluated for implementation during this permit term.

1. The City of Poplar Bluff will share a draft of this plan with the City Council along with sharing a draft through the City's social media outlets and website. This will allow for public input, participation, and involvement.

2. The City will continue to offer an annual community clean up day, "Buff Up the Bluff". Curbside pick-up is offered for senior citizens on this day and roll-off dumpsters are provided by the City for residents to dispose of large amounts of trash. The City also collects tires and brush/limbs on that day as well.

3. This past year the City has begun offering a monthly bulk-trash pick up service to city residents. The City will continue this service in an effort to provide citizens an opportunity to dispose of large, bulky items such as mattresses, appliances, and furniture.

4. The City will begin a program to stencil storm drain inlets. The goal is to stencil twelve (12) inlets per year. This activity will extend in to the next permit cycle and will continue annually as stenciled of one ward per year, which would lead to all inlets being stenciled in a five-year time period.

5. The City will explore the possibility of supporting the creation of a local stream team.

6. The City will develop a mechanism for citizens to report concerns about storm water pollution. This information, once developed, will be available via the city's website.

7. The City has recently created an "Adopt a Street" litter program that encourages local citizens and/or groups to adopt sections of City streets for litter pick up. The City will continue to support and promote this program and anticipates one (1) new street adopted per year.

Measurement of these BMP's will be based on the number of individuals participating in each of the targeted activities. Frequency of the sharing of material on social media sites and updates to the city's website will be measured as well as the public viewing of each.

3.5 ILLICIT DISCHARGE DETECTION AND ELIMINATION

The goal of the Illicit Discharge Detection and Elimination portion of the program is to minimize illicit discharge into waterways by increasing the City's capabilities to identify possible pollution sources, prohibiting illicit discharges through the City ordinances, and establishing a procedure for enforcement. BMP's for this element of the program are as follows:

1. The City will contract with an engineering firm to map all outfalls that discharge into waters of the state. One City Ward will be mapped each year, leading to all outfalls being mapped within five (5) years. The data will be added as a layer to the City's GIS mapping system.

2. The City will develop a plan and inspection forms to conduct dry weather field screenings on the above referenced outfalls. As the outfalls are mapped, they will be added to a schedule of inspections.

3. In cooperation with an engineering firm, the City will develop procedures for locating priority areas that have a higher likelihood of illicit discharges. These areas will also be mapped as one ward per year, mapping all priority areas within five (5) years.

4. The City will contract with an engineering firm to develop and implement procedures for tracing the source of illicit discharges. This will also include methods for eliminating the discharge once the source is determined.

5. The City will continue to support the regional recycling center operated by the Ozark Foothills Solid Waste Management District. Approximately 1,100 tons of recyclables are diverted from the landfill annually through this recycling program. The City will assist in promoting the items they collect that include cardboard, tin, aluminum, paper, tires, used oil, electronics, plastics, and newspaper.

6. Continued Development and Increase the Level of Detail for the Storm Sewer System Map based on the City's GIS system developed using ArcMap 10.1 and utilizing readily available public data. The map outfalls within the City will be updated when the City limits change.

The two main BMP's to be implemented in this permit term are the continued development of the Storm Sewer System Map of the outfalls and also to include permitted basins and the categorization of areas according to the level of impact from storm events. Figure 3, Storm Water Outlets, is an initial portion of the City's Storm Sewer System Map. This map shows the basic drainage areas and identifies the points where storm water leaves the City boundary. Building a map of existing systems will be done over time by adding information to this map, starting with the addition of the permitted basins since the adoption of the 2003 ordinance.

During this permit term, the City will continue to evaluate and revise procedures for identifying illicit discharges, including procedures for identifying target areas, procedures for tracing contaminants to their sources, and procedures for reporting illicit discharges to the City. These procedures will be tested and adjusted to provide the highest level of detection and elimination within the City's budget and personnel constraints.

Measurement of these BMP's will be based on the amount of documentation completed, including mapping and detection procedures. Other units of measure include recording the number of illicit discharges eliminated and detected, the number of reported incidences, and recording known incidental non-storm water discharges. The City will rely on the public reporting the majority of illicit discharges but City staff also regularly inspect the City and will also notify the City Planner when any discharges are noticed. Water quality monitoring at outlet locations around the City is another measure that may be considered.

3.6 CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

The goal of the Construction Site Storm Water Runoff Control portion of the program is to reduce storm water pollutants to the maximum extent practical by requiring construction sites to reduce sediment from site runoff and minimize other pollutants such as litter by keeping sites clean. With the addition of Erosion Control to the Storm Water Management Ordinance in 2003, the focus for this permit term will be continued refinement of the enforcement procedures. BMP's for this program element include the following:

1. The City will review and update City Ordinance Chapter 425, Storm Water Management Plan, along with Section 500.030, Building Permit Fees, to specify what size projects are under the jurisdiction of the City's Storm Water Management Plan. This review is expected to be completed by July 31, 2019.

2. The City will review City Ordinance Chapter 425, Storm Water Management Plan to ensure that all pollutants are addressed that could result from construction site stormwater runoff. Along with the pollutants, the City will ensure that the ordinance includes requirements for construction site operators to control possible site runoff. This review is anticipated to be completed by July 31, 2019.

3. The City will develop a mechanism to receive citizen complaints regarding construction site stormwater runoff concerns. This mechanism will be developed in conjunction with the City's public education information and included on the City's website once developed. It is anticipated this mechanism will be in place by December 31, 2019.

4. The City will develop a site visit inspection procedure, form and schedule for visiting construction sites to ensure that each site is in compliance with local ordinances are appropriate measures are in place to control stormwater runoff from the site. The anticipated completion date for the development of the procedures, form, and schedule is December 31, 2019.

The City prohibits runoff pollution from construction sites and currently reviews site specific BMP's, construction plans, and site-specific storm water management plans for all developments. The City is continuing to modify the procedures for inspection of construction sites and enforcement of runoff pollution prevention requirements. In addition to inspections, the City is continuing to develop procedures for the general public to submit complaints or report illicit discharges from construction sites. These inspection, enforcement, and reporting procedures will continue to be refined and modified to provide the highest level of pollution prevention within the City's budget and personnel constraints. In addition to these measures, the City will be developing standards details and construction requirements to better assist engineers, contractors, and developers in preparing construction site BMP's for their projects.

Measurable goals for this program element include documentation of ordinance revisions, planning processes, and inspection and reporting procedures. The City will maintain records of all submitted complaints and document their action or consideration of each. Recording the number of construction activities either meeting or failing to meet the required pollution

prevention measures will also be done. In addition to documentation, water quality analysis may be considered as a measure of reduction in construction site pollution.

3.7 POST-CONSTRUCTION STORM WATER MANAGEMENT

The goal of the Post-construction Storm Water Management portion of the SWMP is to protect local waterways by reducing the discharge of storm water pollutants from both new development and redevelopment. The following outlines the BMP's for this program element:

1. The City will review and update City Ordinance Chapter 425, Storm Water Management Plan, along with Section 500.030, Building Permit Fees, to ensure post-construction runoff from new developments and redevelopments are addressed. This review is expected to be completed by July 31, 2019

2. The City will develop and implement a combination of structural and non-structural best management practices for post construction stormwater runoff controls. The City will review local ordinances referenced above to ensure requirements for post-construction BMP's. It is anticipated that this review will be completed by 12/31/2019.

3. The City will develop procedures, forms, and a schedule for periodic inspection of post-construction BMP's. This is expected to be completed by July 31, 2020.

The City's Storm Water Management Ordinance will be reviewed to ensure that it requires the development and design of a site-specific storm water management plan for most new development and re-development within the City. Inspection forms will be developed along with a schedule for inspecting post-construction BMP's. The City will assist engineers, contractors, developers, and operators in establishing, maintaining, and improving storm water management facilities by providing information and clarification where required. The City will require Engineer's Certification of Storm Water Management Features that deviate from approved plans.

Measurable goals for this program element again will include documentation and revision to the planning processes, inspection, and reporting procedures. The City will maintain records of all submitted complaints and document their action or consideration of each. Records will be kept of inspections and documentation of actions taken. Inspection reports will also help to qualify the status of existing facilities throughout the City. In addition to documentation, water quality analysis may be considered as a measure of reduction in construction site pollution.

3.8 POLLUTION PREVENTION/GOOD HOUSEKEEPING

The goal of the Pollution Prevention/Good Housekeeping portion of the SWMP is to improve and protect the quality of receiving waters by altering municipal operation performance.

1. The City has recently conducting monthly safety meetings with all employees. Once per quarter the training material will be of a subject related to pollution prevention and good housekeeping. This will be one part of a training program to prevent and reduce stormwater pollution from activities of city employees and departments.

2. The City will develop and implement an operation and maintenance program to prevent stormwater runoff pollution from City operations. This will include a list of all city facilities. This is anticipated to be completed by December 31, 2020.

3. The City will develop an inspection program that will include inspection forms and schedules for inspecting city facilities, maintenance schedules, and maintenance BMP's. It is anticipated that this item will be completed by December 31, 2020.

4. The City will develop written procedures for the proper disposal of waste such as dredged material, sediments, floatables, and other debris. This item is anticipated to be completed by December 31, 2020.

5. The City will review Floodplain development projects for impacts to the overall water quality prior to issuing approval of the Floodplain Development Permit.

6. The City will review the proper storage of chemicals, fertilizers or other potential pollutants used by City employees. This item is anticipated to be completed by December 31, 2019 and ongoing annually.

The City of Poplar Bluff will continue to develop and implement training programs to educate employees on how to incorporate pollution prevention/good housekeeping techniques into municipal operations such as parks and open spaces, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. Also, continued development and documentation of maintenance and inspection schedules for the City's systems of creeks, drainage ditches, culverts, storm sewers, floodgates, and pumping stations will be conducted. These operations are currently performed by the City Street Department, but documentation and reporting will now be coordinated with the planning department as part of this SWMP. Attention will be given throughout the permit term to developing structural and non-structural BMP strategies to be applied by all departments to improve storm water quality. The City will prepare periodic updates to this SWMP as required in the final permit. In the final year of the permit term, the City will revise the SWMP and prepare new goals for the new permit term.

Measurable goals for this program element will include documentation of the planning processes, inspection and maintenance operations, and training activities. Inspection reports will also help to qualify the status of existing facilities throughout the City. In addition to documentation, water quality analysis may be considered as a measure of reduction in construction site pollution.

4.0 SCHEDULE OF IMPLEMENTATION

Table 2.0 on the following pages, entitled "5-year BMP Implementation Schedule: 2016 through 2021 contains a summary of best management practices and estimate of schedules for completing or conducting each item. The period from November 1, 2016 to September 30, 2021 anticipates the approval of the five-year term of the City of Poplar Bluff Municipal Separate Storm Sewer (MS4) National Pollutant Elimination Discharge System (NPDES) Permit by MDNR. Most of the BMP's and tasks are scheduled as either annual events or ongoing, continuing activities. Several indicate an anticipated completion date, while others are designated as "To Be Determined". Implementation schedules are kept general and are subject to modification as the program proceeds and evolves throughout the permit term.

TABLE 2.0 - 5-YEAR BMP IMPLEMENTATION SCHEDULE: 2016 through 2021

PROGRAM ELEMENT BMP'S, ACTIVITIES, AND TASKS	2017	2018	2019	2020	2021
3.3 Public Education and Outreach					
1 Public Educational Materials Developed					
2 Educational Material Shared through social media					
3 Educational Material Shared through City's website					
4 Public educational information shared through local newspaper article					
5 Maintain Pet Waste Stations					
3.4 Public Participation and Involvement					
1 Share draft of the City's SWMP					
2 Annual "Buff up the Bluff"					
3 Monthly Bulk Trash Pick-Up					
4 Stencil stormwater drain inlets					
5 Research creation of Stream Team					
6. Develop mechanism for public to report concerns					
7. Continue to support and promote local "Adopt a Street" Program					
3.5 Illicit Discharge Detection and Elimination					
1 Map all outfalls					
2 Begin Dry Weather inspections of mapped outfalls					
3 Develop procedure for identifying priority areas					
4 Develop procedures for tracing source of illicit discharges					
5 Continue to support local recycling center					
6 Develop of Storm Sewer System Map					

LEGEND: **X** = Completion **O** = Annual Event

TABLE 2.0 - 5-YEAR BMP IMPLEMENTATION SCHEDULE: 2016 through 2021

PROGRAM ELEMENT BMP'S, ACTIVITIES, AND TASKS	2017	2018	2019	2020	2021
3.6 Construction Site Storm Water Runoff Control					
1 Review and Update City Ordinances for project size requirements					
2 Review and Update City ordinances to ensure site owner requirements					
3 Develop a mechanism to receive citizen complaints					
4 Develop an inspection program for construction site visits					
3.7 Post-Construction Storm Water Management					
1 Review and Update City ordinances for post-construction requirements					
2 Develop and implement a list of post-construction BMP's to include in ordinance					
3 Develop inspection program for Post-Construction sites					
3.8 Pollution Prevention/Good Housekeeping					
1 Develop Quarterly employee training materials					
2 Develop operation and maintenance program for city facilities					
3 Develop a city facility inspection program					
4 Develop written procedures for proper disposal of waste					
5.Review Floodplain development projects for potential water quality issues					
6.Review procedures for proper storage of chemical, fertilizers, etc					

LEGEND: **X** = Completion **O** = Annual Event

5.0 MONITORING, RECORDKEEPING, AND REPORTING

Monitoring procedures when used shall meet all requirement of the MDNR MS4 NPDES Permit.

The City will keep records on all activities requiring records for a period of three years and shall make these records available upon request. Activities requiring record keeping include planning and development processes, written procedures and strategies, inspection reports, general public complaints and the City's response, water quality monitoring, and any other items requiring recording as stated above in this SWMP, or as developed throughout the permit term to provide measurable improvement for each of the measurable goals.

The City will submit a report to the permitting authority as specified in the permit terms. The report shall include the status of the City's compliance with the permit conditions, assessment of the appropriateness of the BMP's, and progress toward achieving measurable goals. Results of information collected during the reporting period will be included. The report will summarize activities planned for the next reporting cycle, including an implementation schedule, and any changes made to the SWMP.

6.0 FUNDING ISSUES

Funding for the SWMP implementation is perhaps the biggest challenge for an operator of a small MS4. Funds are needed to maintain the staff, equipment, and materials necessary to develop and implement the program effectively. Many new expenses will be generated by the SWMP including increased personnel time for development of procedures, inspection, maintenance, materials for education and training, and additional materials for municipal pollution prevention operations. These issues will be evaluated during the development of management processes and the development of each BMP. Possible funding options include debt financing, grants and loans, user fees, special site assessments, local contributions for site improvements, inspection fees, developers' fees, fees in lieu of constructing facilities, connection fees, and the City's general budget.

7.0 CONCLUSION

The City of Poplar Bluff has prepared this Storm Water Management Program to fulfill part of the obligation of MDNR and EPA NPDES Phase II Storm Water. This document is a guideline for the City to develop and implement BMP's to reduce storm water pollution. It should be noted however that this is a living document, which will be constantly evaluated and modified within the MDNR MS4 permit requirements in order to ensure storm water pollution control.

FIGURES

FIGURE 1 – VICINITY MAP

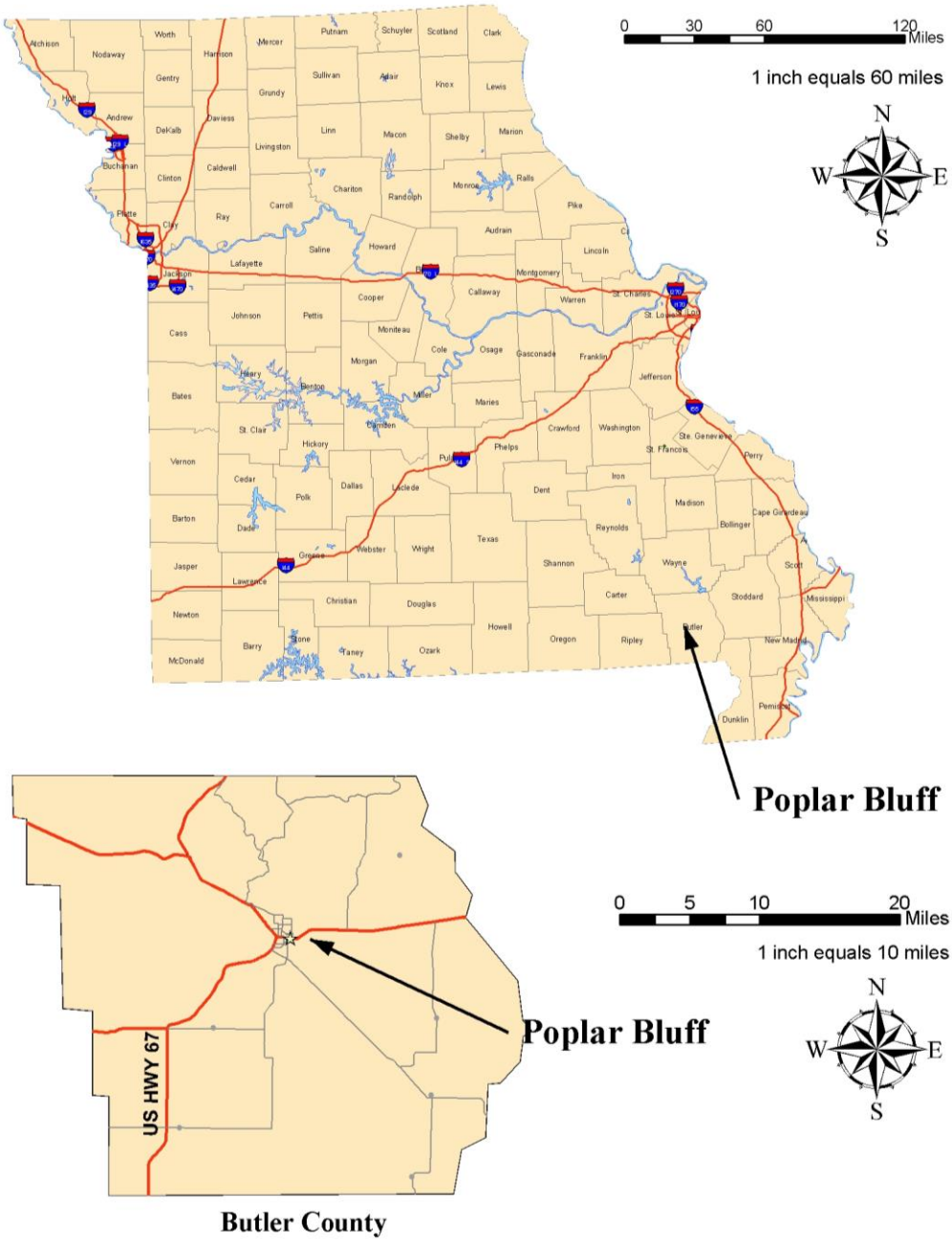


FIGURE 2 – TOPOGRAPHIC MAP

Poplar Bluff Topo Map

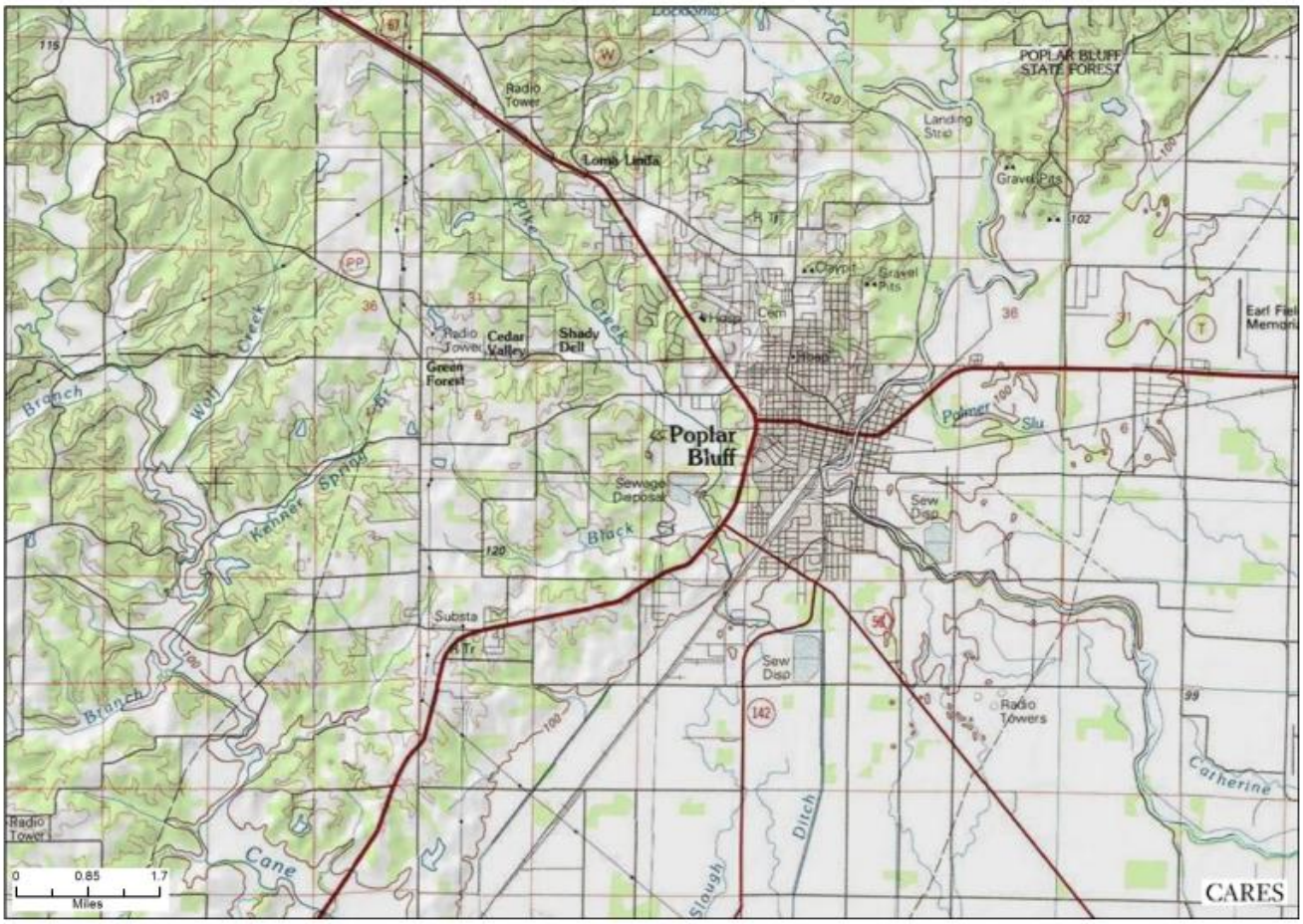
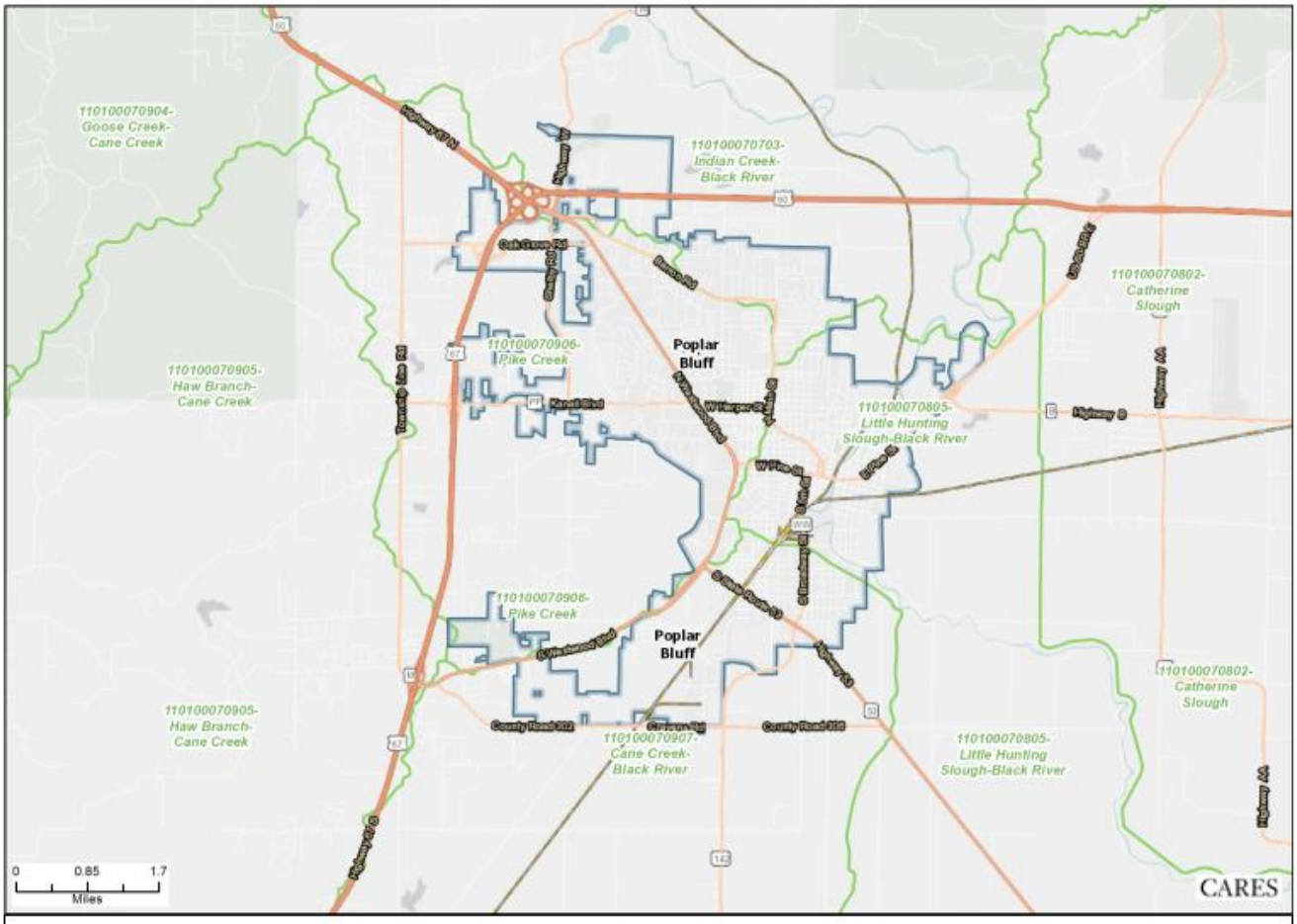


FIGURE 3 – WATERSHED MAP

Poplar Bluff Watersheds



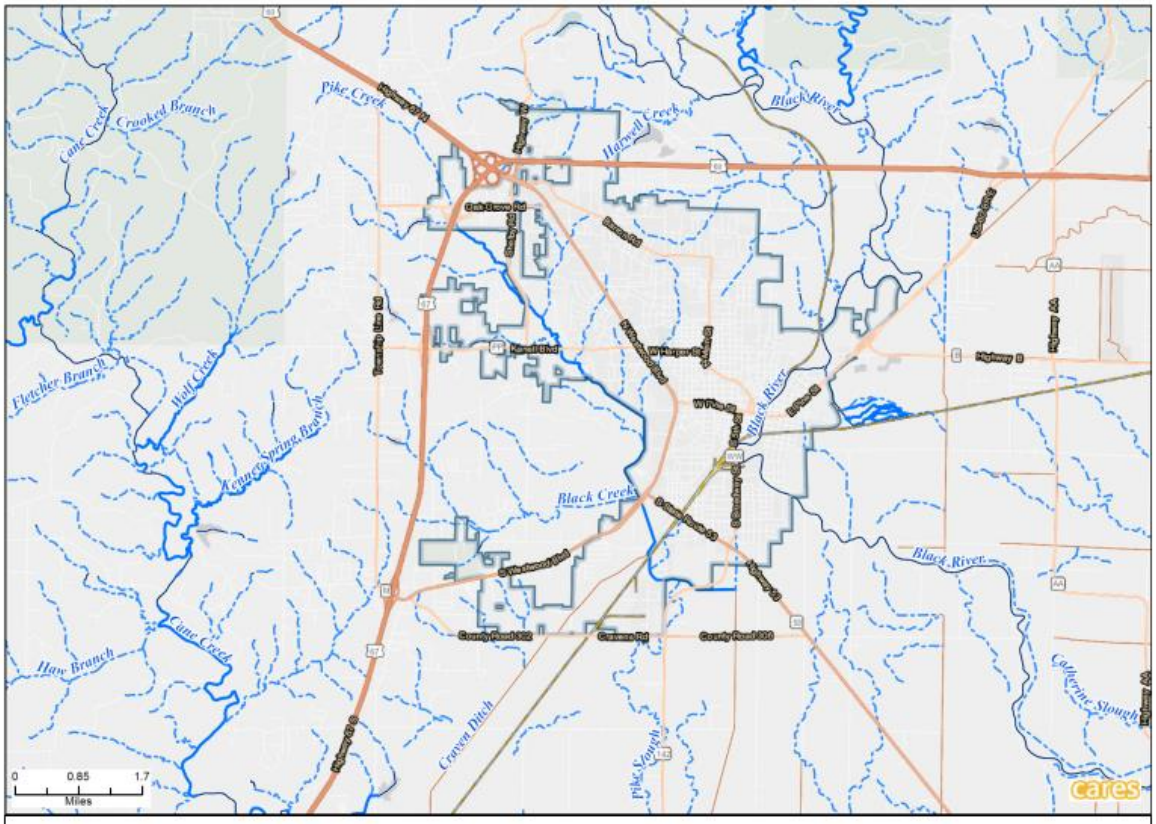
Map Legend

Watershed Boundary Dataset, 12-digit hydrologic units, NRCS 2014

https://allthingsmissouri.org/missouri-map-room/, 12/21/2018

FIGURE 4 – RIVERS AND STREAMS

Rivers and Streams



Map Legend

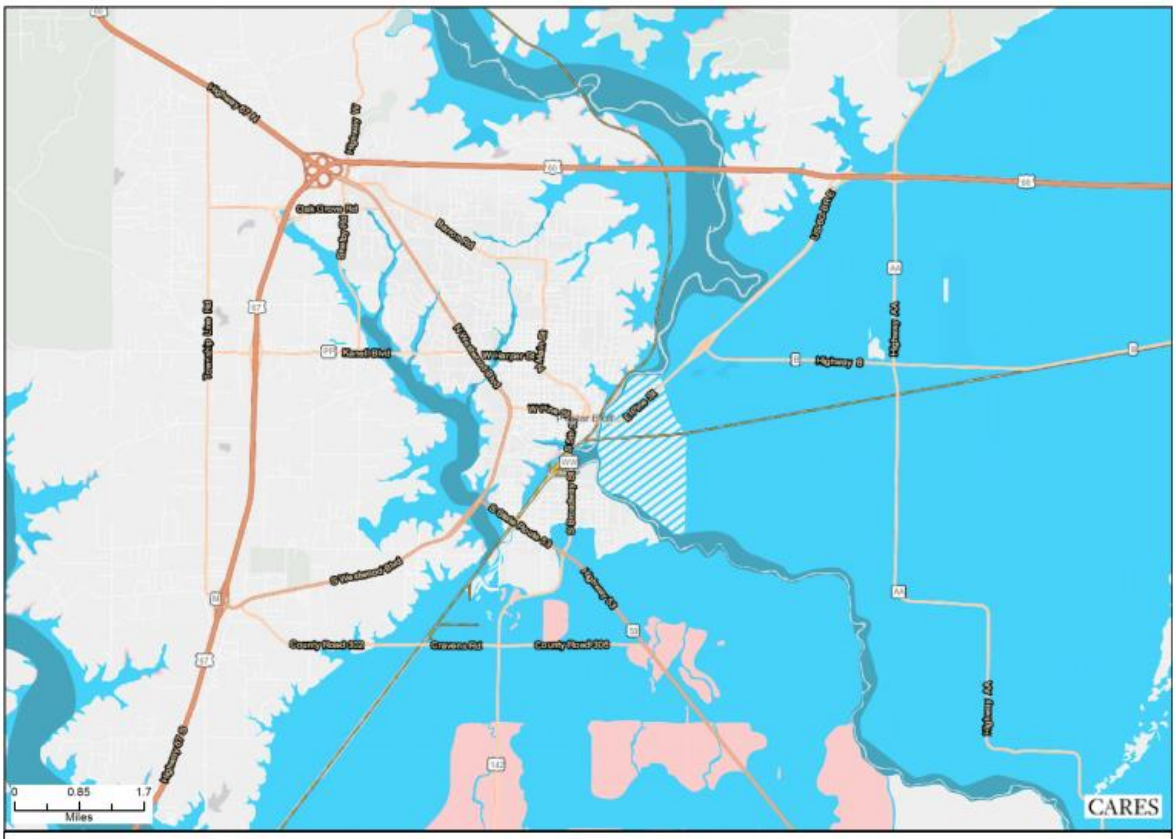
Hydrography - Rivers & Streams, USGS 2016

- Perennial
- Intermittent
- Unclassified
- Canal
- Pipe
- Artificial Path
- Coastline
- Connector

https://allthingsmissouri.org/missouri-map-room/, 12/7/2018

FIGURE 5 – FLOODPLAIN MAP

Floodplain



Map Legend

National Flood Hazard Layer - Flood Hazard Zones, FEMA 2016

- Floodway
- 1% Annual Chance (100 Year) Flood Zone
- 0.2% Annual Chance (500 Year) Flood Zone
- Area with Reduced Risk Due to Levee
- Future Conditions 1% Annual Chance
- Area of Undetermined Hazard
- Water

https://engagementnetwork.org/map-room/, 1/2/2019

City of Poplar Bluff

STORM WATER MANAGEMENT PROGRAM

3.3 Public Education and Outreach

1. Develop/locate training materials 4 times per year.
2. Share training materials through website, social media, and utility bill inserts.
3. Post information to City website.
4. Newspaper Article.
5. Maintain pet waste stations.

3.4 Public Participation and Involvement

1. Share a draft of plan with City Council and on City Websites.
2. Annual Community Cleanup
3. Continue monthly bulk-trash collection program.
4. Stencil 12 stormwater inlets per year.
5. Explore possibility of a Stream Team.
6. Develop a mechanism for citizens to report storm water pollution.
7. Continue Adopt a City Street Program

3.5 Illicit discharge Detection and Elimination

1. Map all outfalls into waters of the state.
2. Develop dry weather field screening program.
3. Develop procedures for locating high priority areas.
4. Develop and implement program for tracing the source of illicit discharges.
5. Support the Ozark Foothills Solid Waste Management District.
6. Development of storm water system map.

3.6 Construction Site Storm Water Runoff Control

1. Review and update if needed City ordinance Chapter 425, Storm Water Management Ordinance.
2. Develop mechanism for citizens to report storm water pollution.
3. Develop Site Inspection procedures and program.

.

3.7 Post Construction Storm Water Management

1. Review and update if needed City Ordinance Chapter 425, Storm Water Management Ordinance.
2. Develop best practices of structural and nonstructural BMP's to for post-construction runoff.
3. Develop post-construction inspection program.

3.8 Pollution Prevention/Good Housekeeping

1. Provide quarterly training materials to all city employees.
2. Develop and implement operation and management program for city operations.
3. Develop an inspection program for City operations.
4. Develop written procedures for waste disposal.
5. Continue to review floodplain development projects.
6. Review City storage of chemicals and pollutants.

FIGURE 6 – SWMP CONTROL MEASURES

EXHIBIT 1

OUTLET INFORMATION

STORM WATER OUTLET – LEGAL DESCRIPTION

Outlet Number	Quarter	Quarter	Section	Township	Range	County	Lat.	Lon.
1	SE	NW	11	24N	6E	Butler	36.74389	90.38484
2	NE	NE	15	24N	6E	Butler	36.73336	90.39592
3	SE	NW	15	24N	6E	Butler	36.72956	90.40063
4	SW	SE	17	24N	6E	Butler	36.72246	90.43708
5	SW	SW	17	24N	6E	Butler	36.72431	90.44471
6	NE	NE	18	24N	6E	Butler	36.73549	90.44564
7	SE	NE	30	25N	6E	Butler	36.78891	90.45091
8	SW	NE	20	25N	6E	Butler	36.80425	90.43694
9	SE	NE	20	25N	6E	Butler	36.80388	90.42878
10	SW	NW	21	25N	6E	Butler	36.80386	90.42660
11	SW	NW	21	25N	6E	Butler	36.80385	90.42355
12	SW	SE	21	25N	6E	Butler	36.79729	90.41893
13	SW	NE	27	25N	6E	Butler	36.78847	90.39988
14	SW	NE	27	25N	6E	Butler	36.78842	90.39713
15	SE	SE	27	25N	6E	Butler	36.78435	90.39139
16	SW	SE	2	24N	6E	Butler	36.75129	90.38247
17	SW	SW	11	24N	6E	Butler	36.73696	90.38708

STORM WATER OUTLET – RECEIVING STREAM

Storm Water Outlet Number	Receiving Water
1	Black River
2	Main Ditch
3	Pike Creek
4	Craven Creek
5	Craven Creek
6	Black Creek
7	Pike Creek
8	Unnamed Tributary to Black River
9	Unnamed Tributary to Black River
10	Unnamed Tributary to Black River
11	Unnamed Tributary to Black River
12	Unnamed Tributary to Black River
13	Unnamed Tributary to Black River
14	Unnamed Tributary to Black River
15	Unnamed Tributary to Black River
16	Unnamed Tributary to Black River
17	Main Ditch

EXHIBIT 2

MDNR NPDES MS4 GENERAL PERMIT

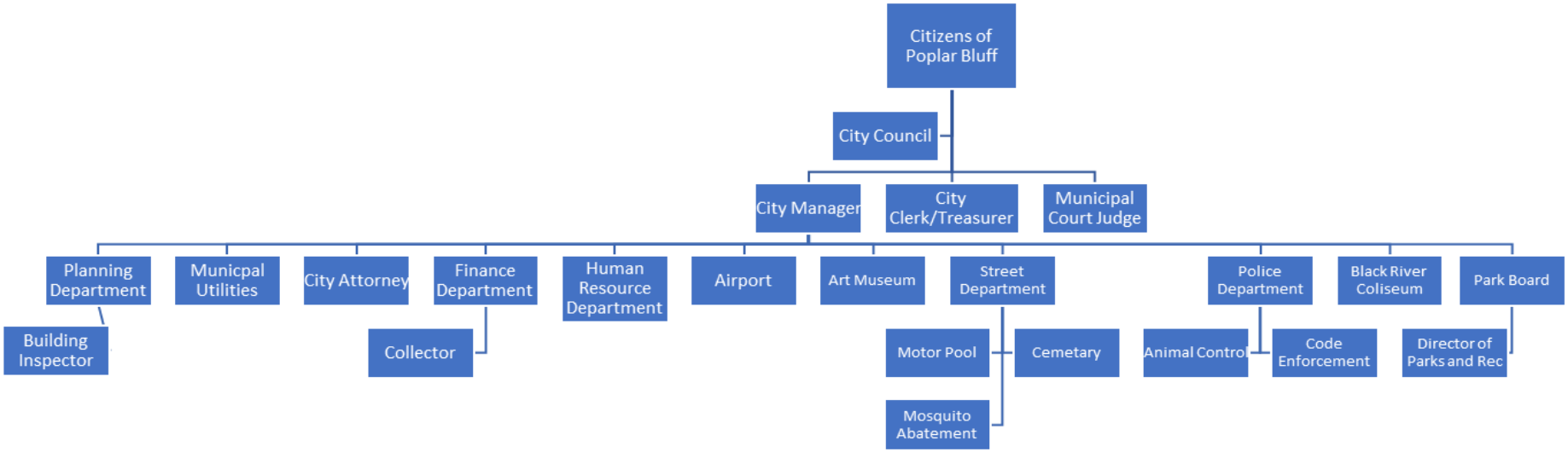
(to be included with SWMP upon issuance by MDNR)

EXHIBIT 3

EXISTING STORMWATER MANAGEMENT ORDINANCE

EXHIBIT 4

CITY ORGANIZATION CHART


Citizens of Poplar Bluff
City Council
City Manager
City Clerk/Treasurer
Municipal Court Judge
Planning Department
Municpal Utilities
City Attorney
Finance Department
Human Resource Department
Airport
Art Museum
Street Department
Police Department
Black River Coliseum
Park Board
Building Inspector
Collector
Motor Pool
Cemetary
Mosquito Abatement
Animal Control
Code Enforcement
Director of Parks and Rec