2013 - 2018
NPDES MS4s PHASE II
STORM WATER MANAGEMENT PLAN
RENEWAL APPLICATION
PERMIT #MO-R040052

Prepared for
Missouri Department of Natural Resources

Prepared by
Jefferson County Stormwater Division
and Community Co-Permittees

Jefferson County
Byrnes Mill
Crystal City
Festus
Herculaneum
Pevely

Please keep our watersheds clean.

NPDES MS4s Phase II

Storm Water Management Plan

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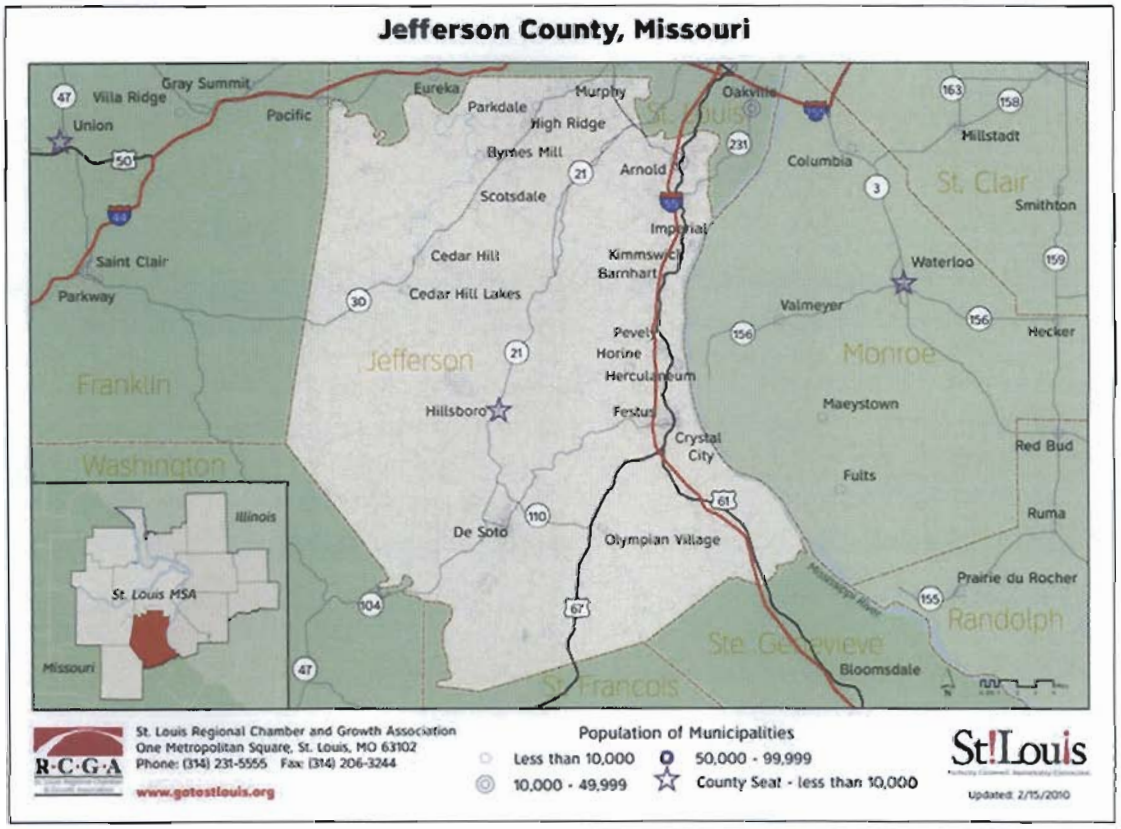
Background

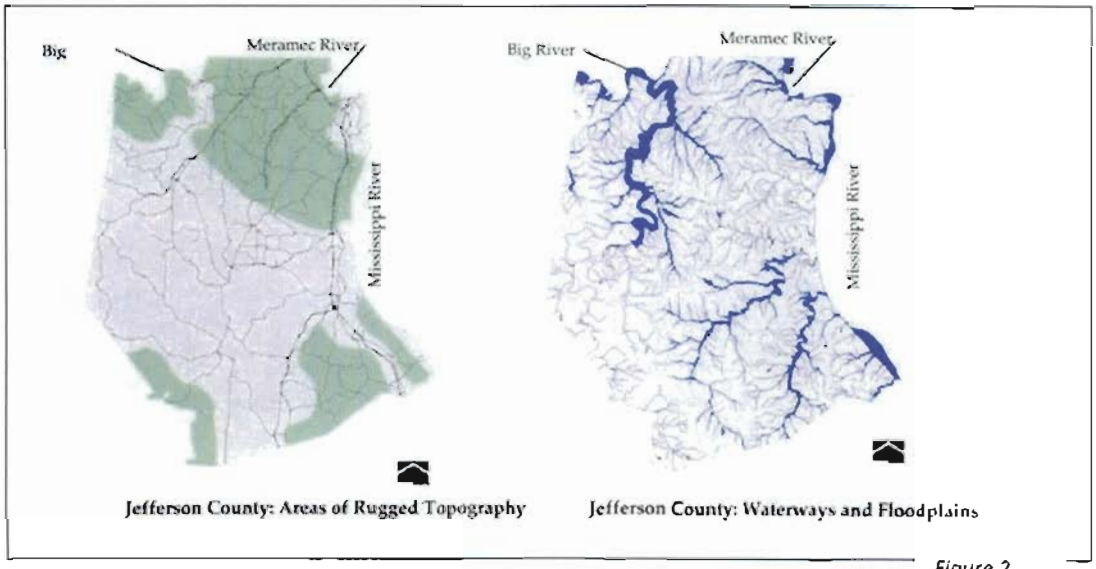
Jefferson County is located in east-central Missouri. The 2010 census estimated the population at 218,733 residents, making it the sixth most populous county in the State. The County encompasses approximately 664 square miles, giving a population density of roughly 333 people per square mile. Within the County, 656.80 square miles (98.9%) are land and 7.29 square miles (1.10%) are water. The County's land use is varied, from the developed, suburban areas in the north and east parts of the County, to the undeveloped rural areas in the west and south parts of the County. The County is bordered on the north by St. Louis County, to the west by Franklin County, to the southwest by Washington County, to the south by St. Francois County, to the southeast by Ste. Genevieve County, and to the east by the State of Illinois (Monroe County). The County's northern boundary is partially formed by the Meramec River, while a portion of the southwest boundary is formed by the Big River, a small portion of the southeastern boundary is formed by the Isle DuBois Creek and the entire eastern boundary is formed by the Mississippi River. (See Figure 1)

Figure 1. Map of Jefferson County, Missouri



Topography and Floodplains

Topography varies considerably throughout Jefferson County. Much of the county, however, can be classified as rugged. Large areas, with greater than 20 percent slopes, that exhibit narrow ridges and deep ravines, are common throughout northern and the southern portions of Jefferson County. The central one-third of the county consists of wider/flatter crests and shallower valleys.



Source: Jefferson County Master Plan, 1999

Figure 2

A significant portion of the county is subject to flooding due to the amount of waterways. The largest and most destructive flooding potential is found along the three major rivers – the Mississippi River, Meramec River, and Big River.

Hydrology

The three largest rivers mentioned above offer both commercial and recreational opportunities. There are many creeks and streams in Jefferson County that flow into the rivers. Many backyard creeks are the headwaters for the larger streams and rivers.

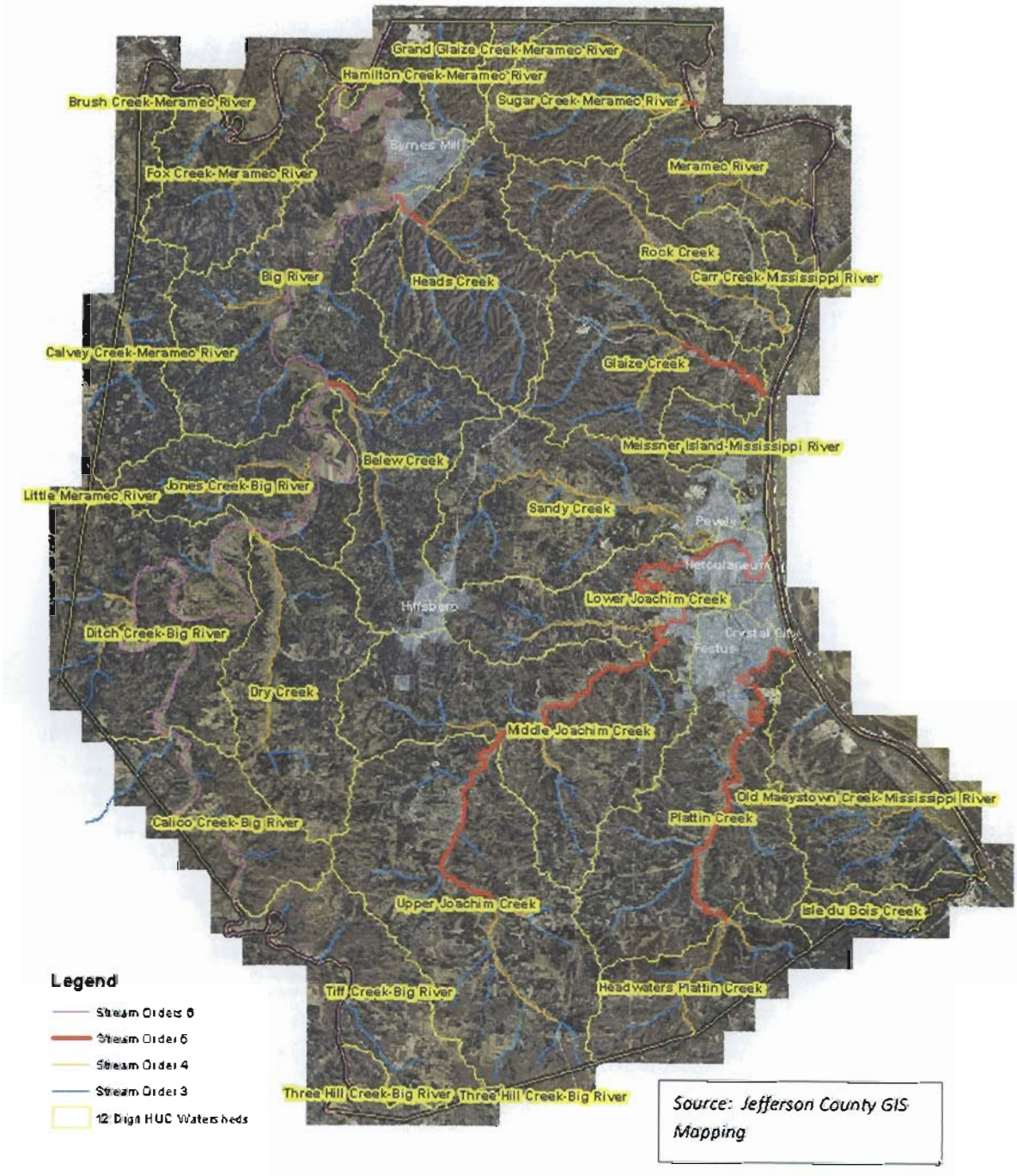
Jefferson County has twenty-nine 12-digit HUC watershed areas. These areas are associated with the major rivers – Mississippi, Big and Meramec, as well as with smaller creeks that have no flow during dry periods. Table 1 below summarizes the main characteristics of each of these watersheds. Following this table is a map showing the location of these watersheds in Jefferson County.

Table 1. List of Watersheds

Watershed	HUC	Acres	2010 Population	Density Pop/sq. mi.
Belews Creek	071401040404	16,539	5,206	201.39
Big River	071401040407	32,961	13,940	270.60
Brush Creek –Meramec River	071401020902	23,584*	11,826*	320.87*
Calico Creek – Big River	071401040401	20,378*	1,039*	32.62*
Calvey Creek – Meramec River	071401020901	36,259*	5,161*	91.08
Carr Creek – Mississippi River	071401010603	17,942	15,889	566.42
Ditch Creek – Big River	071401040403	36,060	2,517	44.66
Dry Creek	071401040402	18,890	1,852	62.73
Fox Creek – Meramec River	071401020903	28,201*	6.995*	158.71*
Glaize Creek	071401010602	17,345	12,446	459.04
Grand Glaize Creek – Meramec River	071401021002	29,895*	104,231*	2,230.52*
Hamilton Creek – Meramec River	071401021001	34,956*	27,115*	496.29*
Heads Creek	071401040406	20,459	9,785	305.99
Headwaters Plattin Creek	071401010805	30,831	1,909	39.61
Isle du Bois Creek	071401010903	13,415*	1,263*	60.22*
Jones Creek – Big River	071401040405	14,645	2,499	109.18
Little Meramec River	071401020801	22,972*	2,302*	64.13*
Lower Joachim Creek	071401010804	16,714	12,304	470.93
Meissner Island – Mississippi River	071401010807	10,384	4,565	281.21
Meramec River	071401021004	27,977*	84,541*	1,932.95*
Middle Joachim Creek	071401010802	29,413	8,607	187.21
Old Maeystown Creek – Mississippi River	071401010904	35,717	2,922	52.33
Plattin Creek	071401010806	29,396	16,127	350.94
Rock Creek	071401010601	16,806	28,074	1,068.61
Sandy Creek	071401010803	23,270	9,858	271.02
Sugar Creek – Meramec River	071401021003	28,854	57,429	1,273.26
Three Hill Creek – Big River	071401040302	36,944	7,545	130.66
Tiff Creek – Big River	071401040303	21,115	1,650	50.00
Upper Joachim Creek	071401010801	39,154	14,395	235.21

*Portions of these watersheds are outside of Jefferson County –figures reflect total for the entire watershed.
Source: MO CARES

Figure 3: Map of 12-Digit HUC Watersheds & Location of Co-Permittee Communities



Population Demographics

Once predominately rural, Jefferson County has experienced over 60 years of continual growth pressures from St. Louis and vicinity as metropolitan population moves to the suburbs. This growth has changed and influenced the character of the county, putting pressure on the existing land uses, natural resources and infrastructure. The chart below shows the actual population growth from 1900 through 2010. (Table Source: Missouri Census Data Center)

Jefferson County Missouri Historical Population Growth Table 2

Year	Population	Year	Population
1900	25,712	1960	66,377
1910	27,878	1970	105,647
1920	26,555	1980	146,183
1930	27,563	1990	171,380
1940	32,023	2000	198,099
1950	38,007	2010	218,733

The population of Jefferson County has increased by over 69% since 1960. The United States Census Bureau shows a double-digit percentage increase in population during each ten-year period since 1960. The next 20 years are projected to see a continuum of the growth trend in Jefferson County. When compared to other counties in the region, Jefferson County falls in the middle. (Source: Jefferson County Official Master Plan, 1999)

According to the map at the right, Jefferson County shows a projected growth of 31.4 percent from 2000 to 2030.

But, as the population continues to grow, there will be an even greater emphasis on environmental concerns such as preserving water quality, assuring sensitive areas are protected, protecting streams with forested buffers and learning how to handle stormwater runoff and pollutant sources at home if Jefferson County is to maintain its greatest resources.

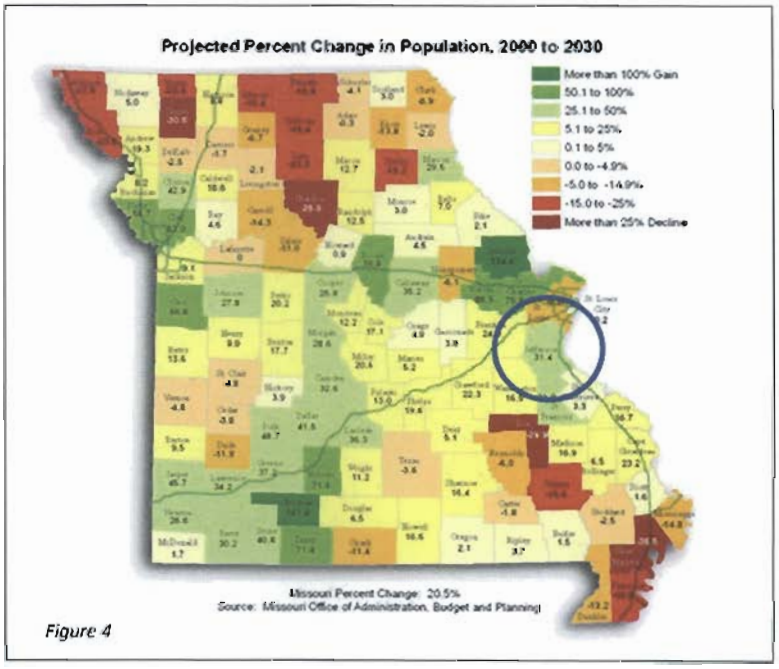


Figure 4

Source: www.missourieconomy.org/indicators/population/pop_proj_2030.stm

The map below shows some of the effects a growing population has on land usage.

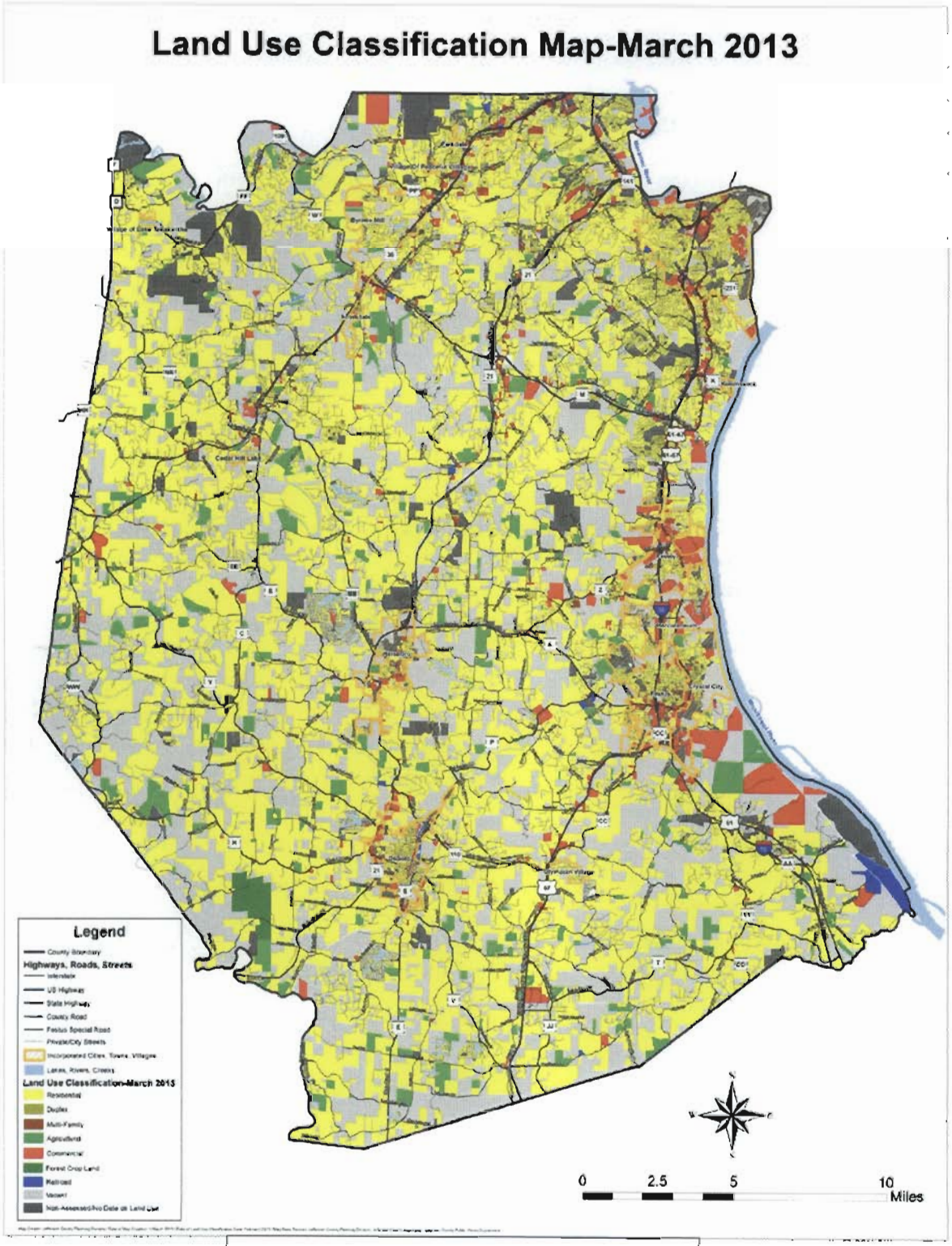


Figure 5 Source: GIS Data provided by Joy Rodenbeck

Requirements of the NPDES MS4s Stormwater Management Plan (SWMP) are designed to:

- Reduce the discharge of pollutants from the permittee's regulated small MS4 to the maximum extent practicable
- Protect water quality
- Satisfy the appropriate water quality requirements of the Missouri Clean Water Act.

To do so, the SWMP includes Best Management Practices (BMPs), control techniques and system, design and engineering methods as well as any other provisions appropriate for the control of stormwater pollutants.

Plan Coordination

Jefferson County and five co-permittees (Byrnes Mill, Crystal City, Festus, Herculaneum, Pevely) are considered Phase II MS4s under the NPDES Permit program and, therefore, currently share a General Operating Permit. This permit requires that we develop, implement and enforce a stormwater management program designed to reduce the discharge of pollutants from MS4s to the maximum extent practicable (MEP) to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act.

The Jefferson County Stormwater Task Force will once again propose one Phase II Stormwater Management Plan and pursue one NPDES permit for Jefferson County and the communities of Festus, Pevely, Herculaneum, Crystal City and Byrnes Mill. Since natural watercourses in Jefferson County intermingle with these communities, it seems viable that controlling stormwater pollutants is best served in a collaborative effort. Each of these municipalities and Jefferson County will follow one plan and one permit to simplify the administration of the Stormwater Management Plan.

Best Management Practices will be developed separately by each co-permittee to help meet the specific needs of that area or community. It will be each co-permittee's responsibility to complete BMPs to comply with the six Minimum Control Measures they have set forth as part of this Stormwater Management Plan. It will also be each co-permittee's responsibility to complete the required monitoring, recordkeeping, annual reporting, and updating of BMPs related directly to their community activities.

Coordinating Authority

Jefferson County is recognized by DNR as the coordinating authority for development and implementation of the Phase II Stormwater Management Plan. As such Jefferson County will coordinate certain activities associated with the Phase II Stormwater regulations. Those activities include, but are not limited to chairing Task Force meetings, mapping, providing technical support, creating educational literature, conducting educational programs, coordinating the completion of annual reports, and forming watershed groups.

Planning Committee

The Jefferson County Task Force consists of the Stormwater Management Plan co-permittees and other interested communities. Its purpose is to coordinate efforts to meet the requirements of the NPDES MS4s Permit. The Task Force holds meetings every two months to share information, answer questions, identify problems, educate, and make decisions regarding goals. Table 2 below lists members of the Task Force.

Table 3

Jefferson County Stormwater Task Force		
Crystal City	Richard Cox Karry Friedmeyer	Building Commissioner Street Supervisor
Festus	Matt Clemens	Building Official
Byrnes Mill	Tony Whitby	Public Works Director
Pevely	Terry Thomas Jessie Wallis	City Administrator Code Enforcement
Herculaneum	Dodie Graves	Building Official
Hillsboro	Gery Marmaduke	City Administrator
Jefferson County	Bill Aho Byron Guertzgen Pat Francis Kristi Bales Dennis Kehm Jason Jonas	Stormwater Division Consultant Stormwater Division Analyst Stormwater Division Coordinator Director, County Services Zoning & Code Compliance Officer Director, Public Works

Jefferson County Water Quality Standards

Establishing water quality standards helps protect and restore the quality of Jefferson County's surface waters, consistent with the requirements of the Clean Water Act. Standards help to identify water quality problems such as runoff or discharges and erosion. Standards also support efforts to achieve and maintain protective water quality conditions including:

- Water quality management plans which prescribe the regulatory, construction and management activities necessary to meet the water body goals,
- NPDES water quality-based effluent limitations for point source discharges,
- Water quality certifications for activities that may affect water quality

The objective is protection of designated uses through the application of narrative or numeric criteria. The State of Missouri and, therefore, Jefferson County follow the general criteria listed below that must be met for all waters of the state.

No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions.

1. Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
2. Waters shall be free from oil, scum, and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses.
3. Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.
4. Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life.
5. There shall be no sufficient human health hazard from incidental contact with the water.
6. There shall be no acute toxicity to livestock or wildlife watering.
7. Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.
8. Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo except as the use of such materials is specifically permitted pursuant to section 260.200-260.247 which refers to disposal and transportation of infectious waste.
   (Source: www.dnr.mo.gov/env/wpp/wqstandards/wq_criteria.htm)

To help meet the water quality objectives, Jefferson County and the co-permittees are following standards as described in the following section. A listing of Jefferson County streams, lakes and rivers that have identified beneficial uses and classifications can be found in the Appendix along with available monitoring data.

Land Disturbance and Stormwater Management

Jefferson County follows a regulatory ordinance titled, *Chapter 505: Erosion and Sediment Control/Stormwater Management Design Manual* that supports the health of our local waterways. Article I, Section 505.010(A) states:

"The purpose of this document is to set forth minimum requirements and provide guidance and additional resources to facilitate control of soil erosion on land that is undergoing development and to preserve the natural terrain and waterways within unincorporated Jefferson County.

The provisions in this manual are intended to provide a natural community environment, to prevent soil erosion and to reduce costly repairs to gullies, washed out fills, stormwater conveyance systems, roads and embankments. Application of the requirements of this manual is intended to mitigate the negative impacts development can have on stormwater quality."

The co-permittees have a similar regulatory ordinance or plan to develop such an ordinance within the 2013-2018 permit cycle. The following explains the purpose of Jefferson County's Section 505 of the Code of Ordinances.

"...With these regulations, the County will promote the coexistence of the natural environment with planned development, assist in the County's efforts to comply with the Phase II Storm Water National

Pollutant Discharge Elimination System (NPDES) regulations, provide effective stormwater management, protect property from damage due to flooding and erosion, improve water quality and reduce water pollution, control construction site impacts on stormwater, prevent non-stormwater discharges into the storm sewer system, protect natural stream assets using buffer strips, and protect valuable natural water resources..." Article II, Section 505.140(A).

Community partners such as the Belews Creek Watershed Partnership, Sandy Creek Watershed Partnership and Stream Team have helped monitor the health of Jefferson County Streams. (See Appendix for a list of sites tested.) A recent report completed by Missouri Stream Team Watershed Coalition called, *The State of Missouri Streams – based on invertebrate data 1993-2010* indicates that the majority of Jefferson County streams (in the Meramec and Upper Mississippi-Cahokia watersheds) are in excellent to good health based on the invertebrates that were found in these streams. Streams in more urbanized areas tend to have less diversified aquatic life.

Stream order maps have been built through GIS to help with the regulatory standards established based on stream size. For example, buffer width requirements are based on stream order. A stream order map can be found in the Appendix.

Minimum Control Measures

Specific performance and monitoring requirements are identified in the NPDES MS4s Permit. These are identified as minimum control measures (MCMs) and reflect six priority categories. The requirements for each MCM and the approach/techniques Jefferson County and the co-permittees will use to satisfy these requirements are reflected in the next sections.

Following this general permit information, there is a section for Jefferson County and each of the five co-permittees. These sections will reflect each group's specific goals, year(s) they will be performed, measurement methods, and the responsible organization for each MCM.

Yearly, Annual Reports will be submitted to DNR reflecting the progress made towards the goals and other information pertinent to this permit.

MCM 1: Public Education and Outreach

The requirements for this program include the implementation of a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of stormwater discharges on local water bodies and the steps that can be taken to reduce stormwater pollution. Permit requirements for this MCM include the following.

A. List the target pollutant sources the public education program is designed to address.
B. Identify the target audiences for the permittees' educational program who are likely to have significant stormwater impacts.

C. Inform individuals and groups on how to become involved in the stormwater management program.
D. Describe the outreach strategy including mechanisms to reach target audiences and how many people expected to be reached over the permit term.
E. Outline a plan to evaluate the success of this MCM.

Jefferson County and their co-permittees will address the MCM 1 requirements through the following approach.

A. Pollutant Sources

One pollutant source that is a contributor to water pollution in Jefferson County has been identified as failing on-site septic systems in unincorporated areas where there is limited access to centralized sewage treatment systems. It is estimated that approximately 50% of homeowners who utilize an on-site septic system have a failing system. The number of failing on-site septic systems in Jefferson County is estimated to be more than 30,000.

After a complaint is made about a failing septic system, an inspector inspects the property to determine the validity of the complaint. If there is a violation, the inspector "posts" the offending home with a violation notice and the regulatory process begins. Jefferson County Code Enforcement is the regulatory authority of Chapter 705: On-Site Sewage Treatment Code which is the regulatory ordinance in the Code of Ordinances.

The Jefferson County Economic Development Corporation has a program that helps homeowners with the expense of installing a working system if they meet the qualifications of the program.

Another major pollutant source that co-permittees will address in their educational campaign is commercial, industrial and household pollutants. Brochures, Homeowners Associations (HOA) presentations, slide shows, etc., have been used to educate homeowners about good homeowner management practices that keep pollutants out of streams. Such pollutants include herbicides, pesticides, fertilizers, paint, yard waste, pet waste, detergents, chlorinated water, vehicle fluids, etc. Other techniques that are shared with homeowners include the use of BMPs to help control erosion of backyards and stream banks by controlling stormwater runoff through LID practices. HOAs are encouraged to facilitate presentations and provide sources of technical assistance to their members on designing rain gardens and/or planting trees. In addition they can develop a program that recognizes for yards promoting Low Impact Development (LID) techniques – rain barrels, composting, habitat gardens, etc., all of which are designed to keep stormwater runoff on-site, control sedimentation and help prevent stream habitat degradation.

B. Target Audiences

A failing sewage system has a significant water quality impact. Homeowners utilizing failing systems are required to replace the system or use a pump and haul service and would benefit from a program that outlines a schedule for regular maintenance and helps identify habits that can cause sewage problems.

Once a sewage system is known to be failing, homeowners need to know what steps to take to remedy the problem.

The more urbanized or highly populated areas have demonstrated a significant impact on water quality by the mere concentration of impervious surfaces and poor homeowner pollution prevention practices or lack of LID practices. Educational programs for subdivision HOAs that encourage good BMPs and LID practices will have a large impact in improving water quality.

C. Involvement in the Stormwater Management Program

Jefferson County communities are involved with and support watershed partnerships. There are currently three active watershed partnerships in Jefferson County. These partnerships know the significance of maintaining good water quality and are already active and educated in water quality techniques. It seems fitting, therefore, to invite these individuals to participate in a management plan that encourages the development of BMPs to protect water quality.

Inviting individuals and groups to become involved in the stormwater management plan can also be posted on the county and communities' web sites.

D. Outreach Strategy

Many organizations exist in Jefferson County that can assist with public education and outreach. These organizations and their potential contributions are listed below:

- **Missouri Department of Conservation**— A partnership with the Department of Conservation would be a good way to educate the public, local government officials, and developers and to obtain ready-made educational materials for distribution.

- **Missouri Watershed Information Network (MoWIN)**—As part of the University of Missouri Outreach & Extension, MoWIN is open and available to all citizens and is a good tool for storm water education and outreach. The website at http://outreach.missouri.edu/mowin/ contains educational resources for teachers and environmental education information.

- **Jefferson County Soil and Water Conservation District (JCSWD)**—The JCSWD provides schools with outdoor classroom instruction to assist Jefferson County teachers and students in learning how to conserve the county's natural resources. JCSWD also makes information available on many BMPs to the public. The Soil and Water Conservation District of St. Louis County, Missouri, has developed the "Stream Care Guide: An Owner's Manual for Streamside Landowners" that would be a good public education tool.

- **The Jefferson County Online INformation Network (JOIN-N)**—JOIN-N is a volunteer community information network that is used by the citizens of Jefferson County to share local community information generated within the county and other information. Cooperation with JOIN-N is a good way to get educational information to the citizens of Jefferson County. A stormwater section of the JOIN-N website could be developed that would link to existing websites that describe SWMPs.

- **Jefferson County Growth Association (JCGA)**—A partnership with the JCGA could be used to educate those developing homes and businesses in Jefferson County about the benefits of good stormwater management and SWMPs.

- **Schools**—Many programs exist to raise environmental awareness in schools, including those found on the MoWIN website listed above. Existing programs can be used to educate children about pollution prevention practices.

- **MDNR**—The MDNR website has information available that could be distributed for public education.

- **Storm Water Manager's Resource Center (SMRC)**—The SMRC can be found on the internet at http://www.stormwatercenter.net. It contains model ordinances, pollution prevention information, fact sheets, and other urban watershed information. It is operated by the Center for Watershed Protection.

- **Jefferson College**—Science programs may be interested in performing some water quality testing or getting involved with Stream Teams or other programs to help the environment while learning.

- **University of Missouri Extension Center**—The Extension Center provides practical education on almost anything for homeowners including natural resources, lawn and garden, nutrition and health, community activities and agriculture. The website address is: www.extension.missouri.edu/jefferson.

The mechanisms that can be used to reach target audiences include:

- Newsletters
- Public media – Newspapers, Radio
- Educational Brochures
- Educational Presentations for inspectors, contactors, engineers
- Website
- Permit Application Attachments

E. Success of MCM

The success of the Public Education plan can be determined by the number of failing sewage systems located and replaced/repaired. The handling of sedimentation, stream bank protection and protection of stream habitat is an on-going process that involves the use of ordinances to establish requirements for stream bank vegetation and LID practices in site design as well as inspection and maintenance programs for these practices. Hazardous household pollutants are addressed through literature that can be downloaded from the Jefferson County and/or the co-permittees' website or picked up at local government offices. HOAs are encouraged to begin a yard waste collection pickup within their subdivision. A successful campaign includes the involvement of subdivision HOAs such that they maintain BMPs and LID practices within their subdivision and offer technical assistance and other water quality training programs within their jurisdiction.

MCM 2: Public Involvement and Participation

The requirements for this minimum control measure include:

A. The development of a program that involves the public in the development and submittal of the permit application and the stormwater management program.
B. Plans to include the public in the development and implementation of this program.
C. Identify target audiences.
D. Identify the types of activities for public involvement and participation.

The Jefferson County Stormwater Management Division and the co-permittees have limited resources tasked with the responsibility of implementing this stormwater permit. Public involvement and participation is a necessity to accomplish the desired results.

To understand what the current conditions are with respect to water quality, Jefferson County has determined this is best approached on a watershed basis. To this extent two EPA nine element watershed management plans (Belews Creek and Sandy Creek) and one conservation watershed plan (LaBarque Creek) have been developed. The development of these plans required extensive participation by the citizens in the watersheds and other contributing organizations.

The intent is to eventually have watershed management plans for all watersheds within the County with the next one to be developed being Heads Creek. This plan will be developed in conjunction with Missouri DNR's efforts to prepare a plan for the Big River.

The co-permittees are cities that are not only within watersheds but are also more organized on a subdivision basis and have an opportunity for public participation at that level as well.

Watershed partnerships (non-profit organizations) have been established for the three watersheds identified above. These organizations are citizen lead and have the mission to implement the goals and objectives identified within their plan. Stormwater management, both the County and the co-permittees, support and facilitate the activities of the partnerships.

A. *Public Involvement in SWMP*
Through correspondence with these partnerships, an understanding of the NPDES Phase II permit and its requirements has been conveyed and input received for this Stormwater Management Plan. Yearly activities and accomplishments will be recorded in the annual report as well as new ideas and suggestions reflected on an on-going basis.

B. *Public Involvement in Participation Program*
As additional watershed partnerships are established, it is the intent to establish a Jefferson County Watershed Coalition where ideas and implementation practices and BMP's can be shared with one another. At this point, citizens living in a watershed that do not yet have a watershed plan will be encouraged to participate and establish a group of interested citizens that can function as a watershed partnership.

C. *Target Audiences*

Without sufficient resources within stormwater management to perform extensive water quality testing, an understanding of the water quality within the County is heavily dependent upon Stream Teams. These teams are trained individuals with the ability to determine the water quality at a specific location using macro-invertebrate findings and chemical testing. These individuals have an interest in the welfare of their adopted streams and their participation and recording of results provides valuable information on a County-wide basis.

D. *Public Involvement Activities*

Stream Teams and the watershed partnerships participate in stream clean-ups and Adopt-A-Highway programs. These activities remove tons of trash each year and not only improve water quality but the appearance and attractiveness of our streams. Stream team and watershed partnership members have solicited participation from numerous schools within the County as well as Jefferson College for their activities. Stormwater management encourages and supports this participation.

Utilizing grants to implement watershed management plan goals and objectives are a necessity if work is to be accomplished. To this extent a grant to remove invasive species has been received in the LaBarque watershed as well as a $300,000 implementation grant for Belews Creek. The activities and match for these grants are the responsibilities of the watershed partnership. Jefferson County Stormwater Management provides assistance in identifying grant opportunities and working with the partnerships on preparing the grant applications.

For the Belews Creek grant, Jefferson County is sponsoring the grant and responsible for ordering materials and the reporting requirements over the four-year grant period. One of the projects associated with this grant is a bio-retention project behind the County Administration Center. This project will provide a demonstration/education area where citizens, designers, and construction firms can see installed stormwater BMP's and how they might apply to their project. Volunteers from the Belews Creek Watershed Partnership will participate in the construction of this project.

The Sandy Creek Watershed Partnership has expressed an interest in participating in a Jefferson County Solid Waste grant proposal on educating the public on household hazardous waste and its disposal and re-cycling. This organization has also responded to an RFP from the National Fish and Wildlife Foundation to fund a riparian corridor restoration project and a bank stabilization project.

MCM 3: Illicit Discharge Detection and Elimination (IDDE)

Permit requirements include the following for this MCM:

A. 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.
B. An ordinance or other regulatory mechanism to effectively prohibit non-stormwater discharges into the permittee's storm sewer system, with appropriate enforcement procedures and actions.
C. 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. Plans to address the thirteen categories of non-stormwater discharges or flows identified in Section 4.2.3.1.4 of the permit, if the permittee identifies any of them as significant contributors of pollutants to the permittee's small MS4.

D. A list, subject to the conditions in Section 4.3.2.1.5 of the permit or other similar occasional incidental non-stormwater discharges that the permittee has determined will not be addressed as illicit discharges.

E. Inventory, inspect and have enforcement authority for industries and commercial enterprises within their boundary that may contribute pollutants via stormwater to the MS4.

There are certain characteristics common to most Illicit discharges. Recognizing the common traits in illicit discharges will alert enforcement to investigate, fix and prevent illegal or illicit discharges into the storm drainage system. Special attention will be given to indicators such as the following:

- measurable flow during dry weather containing pollutants and/or pathogens.
- a unique frequency, composition and mode of entry into the storm drain system.
- when sewage disposal system interacts with the storm drain system.
- from specific source areas and operations known as "generating sites".

Co-permittees may locate illicit discharges that enter the storm drain system by investigating direct and indirect entry points. Direct entry means the discharge is directly connected to the storm drain pipe through a sewage pipe, shop drain, or other kind of pipe.

Indirect entry means that flows generated outside the storm drain system enter through storm drain inlets, are carried by stormwater, or by infiltrating through the joints of the pipe. Co-permittees can investigate the five ways illicit discharges can enter the storm drain system: groundwater seepage, spills, dumping, outdoor washing activities, irrigation from landscaping or lawns.

Another point of investigation is called "generating sites" where common operations can generate indirect discharges. Examples of generating sites include: residential, commercial, industrial, institutional and municipal. The density of these sites may be a good indicator of the severity of local illicit discharge problems.

A. Co-permittees have created a map of the location of all outfalls in their jurisdiction utilizing GIS technology. The individual mapping of outfalls and a descriptive list of the outfalls is located in the section designated for each co-permittee. Co-permittees will monitor each outfall annually or as outlined in their goals and will record inspection results on an Outfall Reconnaissance Inventory Field Sheet (ORI). A sample of this form is in the Appendix.

B. Each co-permittee shall develop an ordinance or other regulatory mechanism that prohibits illicit discharges into their storm sewer system if they do not already have such a mechanism in place. The ordinance or regulatory mechanism shall also include appropriate enforcement procedures and actions. Jefferson County Stormwater Division will request a copy of each co-permittee's ordinance for auditing purposes.

The regulatory ordinance in Jefferson County is in Chapter 505 of the Code of Ordinances. All of Article II and specifically Section 505.180(A-N) addresses pollutant discharge (NPDES) relative to this MCM.

C. Should occasional incidental non-stormwater discharges occur that co-permittees have determined will not be addressed as illicit discharges, co-permittee shall keep on file a list of such discharges. These discharges are subject to the conditions in Section 4.3.2.1.5. Detection may be complaint-driven. Monitoring techniques may include: (1) scheduled outfall inventory (ORI); (2) signs of discharge at outfalls or in streams; and (3) tracking discharges to their source.

D. Failing on-site sewage disposal systems are considered the greatest threat to water quality, aquatic life and public health because they produce very large pollutant loads. Failing septics are a major concern in rural Jefferson County, but not in incorporated communities. Jefferson County does have a regulatory mechanism in place called Chapter 705 that prohibits on-site septic discharge and includes enforcement procedures. Detection of failing septic systems in Jefferson County is complaint-driven.

An educational program for Jefferson County will utilize resource material from the Septic Smart website: http://water.epa.gov/infrastructure/septic/septicsmart.cfm and from East-West Gateway: www.ewgateway.org. Jefferson County intends to create a "universal" brochure called, "My Septic is Failing – What Are My Options".

E. Co-permittees may consider addressing charity car washes as an illicit discharge since they are a popular fundraiser in communities. Because charity car washes generate a large volume of detergent-rich water flows down the street and into the storm drain and because car wash water may contain high amounts of nutrients, metals and hydrocarbons, co-permittees may consider developing a prevention program to reduce the impact of car wash runoff that includes these management practices:
   - Using a commercial car wash
   - Washing cars on gravel, grass, or other permeable surface
   - Blocking off the storm drain during charity car wash events or using an insert to catch wash water
   - Pumping soapy water from car washes into a sanitary sewer drain.
   - If pumping into a drain is not feasible, pumping car wash water onto grass or landscaping.
   - Using hoses with nozzles that automatically turn off when left unattended.
   - Using only biodegradable soaps.

Other outdoor washing activities that may be addressed if found to be significant pollutants to the storm drain are: routine washing of fueling areas, outdoor storage areas, and parking lots (power washing), and construction equipment cleanouts especially if the activities are located in high density areas.

Subdivisions and other highly impervious areas contribute a large amount of "household" pollutants to stormwater runoff and are considered a "generating site". Co-permittees have and will continue to

address household pollutants by providing educational material to homeowners that explains and encourages the use of pollution control measures for good water quality. Brochures, presentations, and web-site material cover topics such as proper use of pesticides, herbicides and fertilizers, using native plants and trees, composting yard debris, proper lawn watering, installing of rain gardens (stormwater retention areas), proper disposal of household chemicals, handling pet waste, sweeping and picking up driveway and side walk debris, proper swimming pool discharge steps, and septic system maintenance.

F. Most industries and commercial enterprises in Jefferson County are permitted directly through DNR to discharge into the storm sewer system. However, should an illicit "leak" occur or "poor housekeeping" reported to local enforcement authorities, a call will be placed to DNR. If co-permittees are asked to visit the site by DNR, the person responsible will do so and report the findings to DNR.

MCM 4: Construction Site and Stormwater Runoff Control

The MS4 permit requirements for this MCM include the development and implementation of the following:

A. 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;
B. 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 on water quality;
C. Procedures for site plan review which incorporate consideration of potential water quality impacts;
D. Procedures for receipt and consideration of information submitted by the public, and
E. Procedures for site inspection and enforcement of control measures.

Sedimentation from unprotected land disturbance at construction sites has been defined in another section of this plan as one of the biggest contributors of pollution to water quality in Jefferson County. Although construction is essential for growth, responsible and considerate construction should be a requirement. The developer/contractor should be encouraged to make every effort to reduce stormwater runoff and pollutant export by changing the way they lay out new development and using and maintaining effective BMPs.

A. Co-permittees will have in place an ordinance or other regulatory mechanism that requires construction sites to control erosion and sediment on-site. Co-permittees may adopt Jefferson County's Chapter 505: Erosion and Sediment Control/Stormwater Management Design Manual ("Design Manual") to meet this requirement. Erosion and Sediment Controls are specifically listed in Article II, Section 505.170(E,F,G). Sanctions are described in Article II, Section 505.290.

A land disturbance permit is required for any land disturbance activity of one acre or more. (Communities may require a permit for less than one acre.) Co-permittees may use the land disturbance submittal requirements outlined in Article II, Section 505.200(A-F). This permit requires sediment and erosion control techniques on all disturbed sites. Escrow is required, but is released when the project is complete and 70% vegetation is established on disturbed land.

B. The required ordinance or other regulatory mechanism mentioned above shall include "good housekeeping" practices that control construction-site waste in a way that prevents adverse impacts on water quality. Jefferson County's Design Manual contains the following:

Article II, Section 505.180(K) as it relates to this provision:

"It shall be unlawful for the owner or occupant of any residence, institution, professional, commercial or business establishment or for contractors or builders engaged in construction or remodeling projects to deposit or accumulate refuse in or upon any lot, parcel of land, public or private drive, alley, street, creek, dry creek or any part of the County's stormwater system natural or manmade or other place in the County, except in an approved containment device or except as allowed under a NPDES permit, the DNR or this Code."

Co-permittees also require a Stormwater Pollution Prevention Plan (SWPPP) as part of the permit application process (Article II, Section 505.220). The SWPPP is reviewed for completeness and must be approved as part of the application. The SWPPP includes Good Housekeeping BMPs in Section 3 that are to be implemented as part of application approval. These BMPs include:

- Material Handling and Waste Management
- Proper Building Material Staging Areas
- Washout Areas
- Proper Equipment/Vehicle Fueling and Maintenance Practices
- Equipment/Vehicle Washing
- Spill Prevention and Control
- Any additional BMPs that should be applied to the site

C. There shall be procedures in place for site plan review. The site plan review process is different for each co-permittee, but all co-permittees have a review process in place to determine if site plans conform with the provisions set within their jurisdiction. In some communities several people from various divisions review site plans. In some cases site plans are reviewed by contracted plan reviewers. Co-permittees may use the review and approval provisions outlined in Jefferson County's Design Manual under Article II, 505.190(F, G).

The plan review stage for residential development is an opportunity to suggest open space techniques that concentrate density on one portion of a site in order to conserve open space for LID and vegetative cover. LID techniques should be encouraged such as spreading stormwater runoff

over pervious surfaces, using open channels rather than curb and gutter, protecting stream buffers and reducing the amount of site area devoted to lawns.

In commercial development the parking lot is the most harmful to water quality. Parking lots accumulate pollutants that leak, drip or wear off cars. Parking lot runoff can have extremely high concentrations of nutrients, trace metals and hydrocarbons. There is no other surface in a watershed that produces more runoff and delivers it faster than a parking lot. When runoff is discharged into a headwater stream, its erosive power degrades the quality of downstream habitats unless stormwater practices are installed. Therefore, developers should be encouraged to use a key design strategy: work to incrementally shrink the surface area of the parking lots and then use the space saved to integrate functional landscaping and better stormwater treatment within the saved space.

Jefferson County staff intends to create an educational document for developers/ contractors that will help explain the application of LID devices in both residential and commercial applications in order to encourage "back to nature" techniques to control runoff. Co-permittees may use the same document within their community.

D. Co-permittees inform neighboring areas about potential large or controversial development by advertising public hearings wherein residents' opinions are heard by community governing authorities. Co-permittees handle any complaints/inquiries from citizens on a case by case basis.

E. Co-permittees do perform site inspections at various stages throughout project development. Site inspections are recommended at the following stages as described in Article II, Section 505.280(E) of the Jefferson County Design Manual:
   - *Upon completion of installation of perimeter erosion and sediment controls;*
   - *During the construction of sediment basins or stormwater management structures, at the inspection points required by the permit;*
   - *Prior to the removal or modification of any erosion and sediment control measure or practice; and*
   - *Upon completion of final grading, including establishment of ground covers and planting, installation of all vegetative measures and all other work in accordance with the approved plan.*

Co-permittees may use the inspections and enforcement measures outlined in Article II, Section 505.290(A-E) of the Jefferson County Design Manual.

MCM 5: Post Construction Stormwater Management in New Development & Redevelopment

Section 4.2.5.1 of the general MS4 permit requires the permittee to develop, implement and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than an acre that are part of a larger common

plan of development or sale, that discharge into the permittee's regulated small MS4. The program shall 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 (MEP). The permit requires that this program include the following:

A. A strategy to minimize water quality impacts, by reasonably mimicking pre-construction runoff conditions in 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;
B. 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;
C. Means to ensure adequate long-term operation and maintenance of BMPs;
D. Policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetland and riparian areas, maintain and/or increase open space, provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation;
E. Policies or ordinances that encourage infill development in higher density urban areas and areas with existing storm sewer infrastructure;
F. Education programs for developers and the public about project design that minimize water quality impacts;
G. 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.

Jefferson County and the co-permittees will administer the post construction stormwater management requirements in new development and in redevelopment through the following procedures.

A. Mimicking pre-construction runoff conditions is a requirement in Jefferson County's design section of the ordinance. Low Impact Development will also provide concepts to facilitate this objective. In Jefferson County developers, plan reviewers, and design consultants are interested in LID, but are more comfortable with conventional practices. Local governments do not require LID practices in their ordinances, however, they encourage their use. The economic benefits of LID practices for water quality and runoff reduction needs to be presented to developers before they will start using these practices in their site design.

   More specific to post-construction issues is educating the landowner to realize the function of Low Impact Development practices that are in place on their property. Many landowners remove swales, berms, retention ponds, or other non-structural BMPs without realizing the purpose of the BMPs is to manage runoff reduction and flow.

B. Jefferson County and co-permittees will ensure that post-construction BMPs are included in the site design and plan review process. This review process ensures that the developer and the design professional has either met with or spoken to individuals in the plan submittal and review process, and has access to design criteria and regulations. The process includes a maintenance performance guarantee called escrow. The escrow is released once a final inspection is completed and all requirements of the regulatory ordinance are met. All development and redevelopment sites must follow the guidance in the regulatory ordinance.

C. Jefferson County and co-permittees shall have in place a regulatory mechanism to ensure long-term maintenance and operation of post-construction stormwater facilities. This ordinance will specify who is responsible for the maintenance of those facilities once escrow is released. A maintenance process and schedule and an inspection schedule procedure must be established. The ordinance can specify that maintenance records be kept for review by the regulatory authority and specify penalties imposed if facilities are not maintained properly as specified in the ordinance. An example of such requirements can be found in Jefferson County's Erosion and Sediment Control/Stormwater Design Manual, Chapter 505, Article II, Section 505.280(D) 1-5 and Article II, Section 505.180(L).

D. Ordinances require that sensitive areas such as wetlands, sink holes and riparian areas be protected by utilizing BMPs or non-structural features during construction and post-construction. Developers must identify sensitive areas and specify protective devices in their site specific SWPPP. Such regulations can be found in Article II, Section 505.140(B)1-2 of Jefferson County's Chapter 505. The following strategies are included to protect water quality and protect environmentally sensitive areas: stream buffers, floodplain protection, conservation easement, infill development design standards, landscaping, and fencing.

E. As mentioned in the above paragraph, infill development is identified in the regulatory ordinance as a strategy to help protect water quality in higher density areas.

F. Jefferson County intends to develop an informational manual for developers and plan reviewers addressing the environmental benefits, installation techniques, and site specific design of techniques that mimic pre-construction runoff conditions. Information for this manual will come from a variety of sources. Because the manual can be used locally, the preparation process would be an excellent opportunity to engage local design consultants as well as an opportunity to engage homeowners (stakeholders) by inviting their input and providing them with insight into the stormwater approach. Other strategies to introduce BMPs that mimic pre-construction runoff to the public include outreach events, workshops, site tours, demonstration BMPs and public meetings and hearings. Communities can also provide inspection training and workshops on how to perform basic maintenance.

G. Homeowners or HOAs are concerned about the abundance of stormwater runoff in their subdivision. Co-permittees have developed presentations and have access to materials on the

community websites that guide concerned citizens in the establishment of techniques that control stormwater at its source. Material mentions such techniques as:

- Rain Gardens
- Conservation Landscaping
- Soil Amendments
- Tree Canopies
- Gutter Disconnect
- Pervious Pavement
- Rain Barrels
- Cisterns
- Dry Wells
- Rockscaping
- Swales
- Berms
- Check Dams
- Streambank Stabilization

Brochures that address good housekeeping techniques at home are located on community websites. Some titles include, "Solution to Stormwater Pollution". "The Dozen That Makes A Difference" and "Home Management Plan". Some of the source control measures mentioned in these brochures are:

- Water only when needed
- Limit the use of pesticides, herbicides, fertilizers and get soil tested
- Plant natural vegetation
- Compost yard waste or mulch
- Dispose of driveway sweepings in the trash
- Redirect rooftop runoff
- Dispose of pet waste properly
- Wash car on a grassy area
- Properly maintain vehicles
- Dispose of HHW properly
- Maintain septic system regularly
- Join a watershed organization
- Clean up discarded trash/litter
- Reseed bare soil or plant suitable ground cover

Communities also advocate that HOAs establish programs within the subdivision to encourage and support ways of promoting stormwater best management practices. Some of the suggestions include:

- Creation of demonstration lawn and garden programs

- Offer assistance in lawn composting
- Offer tree planting assistance
- Promote backyard habitat gardens
- Provide regular yard waste pickup
- Provide leaf pickup
- Provide natural landscaping guides
- Distribute discounts for commercial car washes
- Distribute directories of used oil collection stations
- Promote purchase of safe car washing products
- Offer technical assistance on BMP design consultation

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

Permit requirements for this MCM include the following areas:

A. A list of all municipal operations that are impacted by this Operation and Maintenance Program (O&M);
B. Maintenance BMPs, maintenance schedules and long term inspection procedures for controls to reduce floatables and other pollutants to the permittee's MS4;
C. 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;
D. Good housekeeping practices to keep solid waste from entry into waters of the county to the maximum extent practicable; (4.1.5)
E. All paint, solvents, petroleum products and petroleum waste products (except fuels) under the control of the permittee shall be stored so that these materials are not exposed to stormwater. Sufficient practices of spill prevention, control, and/or management shall be provided to prevent any spills of these pollutants from entering a waters of the county. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater; (4.1.8)
F. Procedures for the proper disposal of waste removed from the permittee's MS4 including dredged materials, accumulated sediments, floatables, and other debris;
G. Procedures to ensure that flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices;
H. Develop an employee training program to prevent and reduce stormwater pollution from activities such as open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. Describe training materials permittee plans to use and describe how this training program will be coordinated with the outreach programs developed for the public information MCM and the illicit discharge MCM.

Jefferson County and the co-permittees will utilize the following procedures to fulfill the requirements for pollution prevention and good housekeeping for municipal operations.

A. Since this permit application includes Jefferson County and five co-permittees, the list of all municipal operations impacted by an Operation and Maintenance Program includes: highway sheds, fuel/chemical storage, vehicle storage facilities, vehicle maintenance facilities, salt/gravel storage. Jefferson County has no industrial facilities under its jurisdiction. The table below lists industrial facilities owned and operated by the co-permittees and have separate NPDES operating permits for these facilities.

2013 Co-Permittees' Site Specific Permits		
Permit Number	**Applicant**	**Location**
MO0115428	Byrnes Mill South WWTF	Byrnes Mill
MO0108707	City of Festus	Festus
MO0040142	Pevely Waste Water Treatment Facility	Pevely
MO0122777	Festus Interior West Treatment Plant	Festus
MO0080632	Festus Crystal City Sewage Treatment Plant	Festus/Crystal City
MO0027111	Herculaneum Waste Water Treatment	Herculaneum

Source: Missouri Department of Natural Resources NPDES website

Table 4

B. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared for each municipal operations site. SWPPPs will include maintenance BMPs, maintenance schedules and long-term inspection procedures. SWPPPs will include points of contact or responsible persons for the stated maintenance and inspection activities. SWPPPs will be kept on file and will be used as a guide for completion of tasks necessary to reduce pollutant sources.

C. Controls to reduce or eliminate the discharge of pollutants from impervious surfaces or storage areas such as roads, parking lots, storage yards, fleet or maintenance shops, salt/sand storage locations and snow disposal areas may be constructed or reconstructed to provide adequate stormwater drainage or eliminate it. Infrastructure may need replacement or repair. Replacement/renewal projects include routine inlet repair/reconstruction, sewer replacement/rehabilitation, culvert improvements, and improved stream bank repairs. Emergency projects include stormwater facilities to keep the drainage system functioning as designed, emergency response to flooding events, inlet cleaning, sewer cleaning, debris removal from culverts and open channels, erosion repair and complaint response. Co-permittees have staff or specific departments within their jurisdiction to handle projects.

Roadway culverts are maintained by the agency responsible for the road. Private roads are maintained by the homeowners. Storm sewers, inlets and catch basins are maintained by the agency responsible. In some areas, subdivisions are responsible for the upkeep of these projects.

Detention basins and post-construction BMPs are the responsibility of the property owner or HOA. However, in some communities detention basins are maintained by city staff. Each co-permittee has their own policy regarding maintenance of trench drains, swales, roadside ditches and gutters. Responsibility usually falls on either the local government or the homeowner.

D. Good Housekeeping practices apply to custodial activities, operation and maintenance activities in shops, on streets and at field facilities. Best Management Practices under this category include those dealing with materials management and storage, e.g. salt, compost, etc., safe material substitutions, spill plans, scheduling and solid waste issues like trash and litter. Some other examples are listed in the following table.

Title	Description
Cleaning and Maintenance of Roadways, Highways, Bridges, and Parking Facilities	Pavement cleaning, deicing material storage and use, erosion and sediment control, capture of pollutants during maintenance work
Vehicle/Equipment Repair and Maintenance Operations	Lubricant use/storage/disposal, spill cleanup, waste material storage, disposal of used tires,
Vehicle and Equipment Washing	Disposal of oil and sediment from vehicle
Vehicle Fueling	Storage of fuel, use of shutoff nozzles and breakaway valves, proper fueling and cleanup
Facility Repair, Remodeling, Construction	Proper waste disposal and use of site BMPs
Hazardous Materials Handling/salt storage	Proper handling/use/storage
Maintenance of landscaping	Integrated pest management, effective irrigation, smart usage of fertilizers, herbicides and pesticides.

Table 5

E. Hazardous materials (paints, solvents, petroleum products and petroleum waste products except fuels, herbicides, pesticides, fertilizers) used in daily operations shall be prepared for use and stored in separate storage areas (contained areas) so that they are not exposed to stormwater. All quantities of hazardous materials shall be documented. Proper disposal methods will be practiced including the use of a professional hazardous materials disposal company. Spill prevention practices, cleanup and disposal techniques shall be part of on-going state training and licensing. Training and licensing may be required under Alcohol, Tobacco and Firearms (ATF).

F. Procedures will be documented for the proper disposal of accumulated debris and sediments from ditch clean-outs, street sweeping, bridge cleaning, pipe cleanouts, facility construction debris, etc. Options used currently include a commercial disposal company, use of an off-site composting facility, or delivery to a landfill.

G. New projects are designed with consideration to any impacts on water quality especially in a potential flood area. Engineering design includes protection devices or practices as required in the co-permittee's erosion/sediment control regulatory ordinance. Co-permittees have a strong flood damage prevention program within their jurisdiction that establishes requirements for structural stability and function as well as a provision that protects water quality from hazardous materials by requiring all storage and handling sites to be elevated above the 500-year flood elevation (Article 5, Section A-9). Procedures are in place to review new and existing facilities/operations to minimize impacts on water quality.

H. Training is a component of each area under this MCM. Co-permittees have developed training programs geared to the specific needs and activities of their staff. Co-permittees will keep records and track their training activities to document and ensure that all employees received training applicable to their job responsibilities. It is recommended that refresher training be conducted annually or as needed for new procedures to ensure employee knowledge and skills are maintained and updated. Jefferson County has a collection of training material and presentations available for use. Co-permittees also use training materials found on the EPA website. One such document titled, *"USEPA: Pollution Prevention/Good Housekeeping for Municipal Operations"* is a good source of BMPs for each category of municipal operations. DNR supplies websites to the co-permittees that contain training material on specific subjects.

Monitoring, Recordkeeping and Reporting

Each co-permittee under this permit shall designate individuals within their jurisdiction to be responsible for the stormwater management program and to comply with monitoring, recordkeeping and reporting requirements of the program. These individuals are identified as members of the Jefferson County Stormwater Task Force and are listed in the *Plan Coordination* Section.

Any changes replacing ineffective or infeasible BMPs outlined in the Stormwater Management Plan will be made by the co-permittee whose jurisdiction that BMP applies. An alternative BMP will be suggested to DNR along with the following information:

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

Monitoring

Water quality monitoring requirements shall follow EPA Guidelines as outlined in the Illicit Discharge and Elimination Manual. The ORI Field Inventory Form shall be used for recording findings. A sample of the form can be found in the Appendix.

Recordkeeping

Each co-permittee designee will have overall charge of stormwater management activities within the co-permittee's area of jurisdiction. The individual will be responsible for ensuring that:

- All elements of this stormwater management plan are effectively implemented
- Required inspections are made
- Required records are kept as identified in the permit, and
- Information required for inclusion in reports to MDNR is provided to the coordinating authority (Jefferson County Stormwater Division) as scheduled.

Reporting

As the recording authority for the SWMP, Jefferson County Stormwater Management Division will compile the information provided by the individual co-permittees to satisfy the permit's annual review, program evaluation and annual report requirements. The Stormwater Management Division Staff will develop appropriate standardized forms that co-permittees can use to supply required information. The Stormwater Management Division will develop schedules for submittal of information required for reporting purposes, including annual reports.

Jefferson County
NPDES MS4s PHASE II
Stormwater Management Plan – 2013 – 2018

Appendix

Exhibit A

Water Quality Standards
Jefferson County Stream Use Designations

Waterbody	Miles	IRR	LWW	AQL	CLF	WBC	BTG	DWS	IND
Bear Creek	1.3		X	x					
Big River	53.0	X	X	X	X	X	X		X
Bourne Creek	1.9		X	X					
Buck Creek	1.0		X	X					
Butcher Branch	1.6		X	X					
Calico Creek	2.5		X	X		X			
Cotter Creek	1.5		X	X					
Ditch Creek	1.8		X	X		X			
Dry Creek	8.2		X	X					
Dulin Creek	1.4		X	X					
Dutch Creek	1.6		X	X					
Galligher Creek	0.2		X	X					
Glaize Creek	7.5		X	X					
Heads Creek	4.5		X	X					
Hocum Hollow	0.5		X	X					
Isum Creek	0.3		X	X					
Joachim Creek	30.5		X	X		X	X		X
Jones Creek	3.5		X	X					
Kruze Creek	0.5		X	X					
LaBarque Creek	4.0		X	X					
Little Creek	1.5		X	X					
Mammoth Creek	0.4		X	X					
Maupin Creek	1.3		X	X					
McMullen Creek	1.0		X	X					
Meramec River	85		X	X		X	X	X	X
Mississippi River	200.5	X	X	X			X	X	X
Muddy Creek	3.0		X	X					
N. Fork Jones Creek	0.5		X	X					
Plattin Creek	24		X	X		X	X		X
Pomme Creek	2.0		X	X					
Rock Creek	8		X	X					
Saline Creek	4		X	X					
Sand Creek	1.3		X	X					
Sandy Creek	6		X	X					
Skull Bones Creek	1.1		X	X					
Sugar Creek	4		X	X					
Tiff Creek	1.7		X	X					
Tyrey Creek	0.8		X	X					
W Fork Jones Creek	0.5		X	X					
West Fork	3.0		X	X					

Source: Jefferson County SWMP, 1999

IRR Irrigation
LWW Livestock & Wildlife Watering
AQL Protection of Warm Water Aquatic Life And Human Health-Fish Consumption
CLF Cool Water Fishery
WBC Whole Body Contact Recreation
BTG Boating & Canoeing
DWS Drinking Water Supply
IND Industrial

Water Quality Standards
Lake Classifications and Use Designations
In Jefferson County

Exhibit B

Waterbody	Class	Acres	LWW	AQL	WBC	BTG
Cole Creek	L3	38	X	X	X	X
Lake Fon Du Lac	L3	33	X	X	X	x
Lake Lorraine	L3	70	X	X	X	x
Montonese Lake	L3	45	X	X	X	x
Raintree Lake A	L3	126	X	X	X	X
Summerset Lake	L3	75	X	X	X	x
Sunrise Lake	L3	46	X	X	X	X
Tishomingo Lake	L3	115	X	X	X	X
Valle Lake	L3	100	X	X	X	X
Wauwanoka Lake	L3	86	X	X	X	x

Source: Jefferson County SWMP, 1999

LWW	Livestock & Wildlife Watering
AQL	Protection of warm water Aquatic Life and human health/fish consumption
WBC	Whole Body Contact recreation
BTG	Boating and canoeing

Class L3 Other public and private lakes, which are waters of the state

Topographic Map Stream Features in Jefferson County Missouri
(Source: www.topozone.com/states/Missouri.asp?county=Jefferson&feature=Stream)

Exhibit C

Stream	USGS Topography Map/Community	Elevation in Feet	Latitude	Longitude	Class
Ball Branch	DeSoto	462	38.161°N	90.545°W	
Barbin Branch	Halifax	515	38.068°N	90.417°W	
Bear Creek	House Springs	469	38.410°N	90.572°W	P
Belews Creek	Cedar Hill	459	38.338°N	90.627°W	
Bethlehem Creek	Cedar Hill	479	38.263°N	90.694°W	
Big Creek	Herculaneum	436	38.292°N	90.490°W	
Big River	House Springs	403	38.472°N	90.618°W	P
Black Creek	Maxville	397	38.377°N	90.380°W	
Bourne Creek	House Springs	466	38.406°N	90.570°W	P
Buck Creek	Pacific	462	38.375°N	90.660°W	C
Buck Creek	Festus	410	38.213°N	90.442°W	C
Butcher Branch	Fletcher	535	38.218°N	90.657°W	P
Calico Creek	Fletcher	522	38.179°N	90.717°W	P
Carson Creek	Vineland	577	38.061°N	90.614°W	
Cotter Creek	DeSoto	443	38.178°N	90.528°W	C
Ditch Creek	Fletcher	512	38.229°N	90.739ºW	P
Dry Creek	Festus	466	38.229°N	90.499°W	P
Dry Creek	Cedar Hill	476	38.271°N	90.671°W	P
Dry Fork	Halifax	479	38.095°N	90.398°W	
Dulin Creek	House Springs	449	38.417°N	90.584°W	P
Dutch Creek	Cedar Hill	446	38.364°N	90.660°W	P
Falling Rock Branch	Vineland	515	38.115°N	90.561°W	
Finney Creek	Halifax	718	38.038°N	90.497°W	
Fisher Branch	DeSoto	466	38.158°N	90.545°W	
Fletcher Branch	Vineland	636	38.057°N	90.513°W	
Flucom Creek	Halifax	436	38125°N	90.416°W	
Fritz Creek	DeSoto	499	38.163°N	90.565°W	
Galligher Creek	Belews Creek	541	38.270°N	90.595°W	P
Glaize Creek	Valmeyer	380	38.334°N	90.374°W	P
Grey's Branch	Fletcher	541	38.137°N	90.697°W	
Gus Creek	Fletcher	554	38.129°N	90.688°W	
Haverstick Creek	DeSoto	433	38.180°N	90.504°W	
Heads Creek	House Springs	430	38.422°N	90.589°W	P
Hocum Hollow					C
Isum Creek	Cedar Hill	453	38.344°N	90.630°W	C
Joachim Creek	Valmeyer	387	38.261°N	90.372°W	P
Jones Creek	Cedar Hill	466	38.304°N	90.638°W	P
Kruze Creek	Fletcher	505	38.248°N	90.738°W	P

Stream	USGS Topography Map/Community	Elevation in Feet	Latitude	Longitude	Class
LaBarque Creek	Pacific	423	38.454°N	90.657°W	P
Little Creek	Festus	394	38.228°N	90.437°W	C
Mammoth Creek	Tiff	551	38.123°N	90.437°W	P
Mammoth Creek	Tuff	574	38.125°N	90.672°W	P
Maupin Creek	Fletcher	518	38.238°N	90.740°W	P
McFall Creek	Pacific	423	38.451°N	90.686°W	
McMullen Branch	Vineland	538	38.100°N	90.533°W	C
Meramec River	Oakville	380	38.390°N	90.344°W	P
Muddy Creek	Selma	380	38.148°N	90.290°W	C
Murril Branch	DeSoto	485	38.184°N	90.560°W	
North Fork Jones Creek	Cedar Hill	535	38.294°N	90.681°W	P
Parker Creek	Tiff	548	38.123°N	90.677°W	
Perkins Creek	Tiff	725	38.095°N	90.625°W	
Plattin Creek	Selma	380	38.215ºN	90.360ºW	P
Pomme Creek	Oakville	380	38.418ºN	90.347ºW	P
Reynolds Creek	Fletcher	499	38.241ºN	90.653ºW	
Rock Creek	Valmeyer	380	38.364ºN	90.359ºW	C
Rocky Branch	Halifax	505	38.072ºN	90.416ºW	
Romaine Creek	Maxville	397	38.464ºN	90.423ºW	
Saline Creek	Maxville	394	38.471ºN	90.424ºW	P
Saline Creek	Selma	377	38.145ºN	90.284ºW	C
Sand Creek	Pacific	449	38.385ºN	90.634ºW	P
Sandy Creek	Herculaneum	374	38.266ºN	90.403ºW	C
Skullbones Creek	Cedar Hill	446	38.345ºN	90.653ºW	C
South Fork Isle du Bois	Danby	397	38.089ºN	90.294ºW	
Sugar Creek	Maxville	397	38.464ºN	90.423ºW	C
Tanyard Branch	DeSoto	492	38.130ºN	90.556ºW	
Tiff Creek	Vineland	581	38.058ºN	90.618ºW	P
Tyrey Creek			12,40N,02E		P
Valles Mines Creek	Halifax	676	38.048ºN	90.495ºW	
West Fork Jones Creek	Cedar Hill	535	38.294ºN	90.681ºW	P
West Fork Plattin Ck.	Halifax	561	38.044ºN	90.416ºW	C
Whitehead Creek	Vineland	518	38.115ºN	90.561ºW	
Wine Creek	Cedar Hill	495	38.352ºN	90.682ºW	

Class P – streams that maintain permanent flow even in drought conditions

Class C – streams that may cease flow in dry periods but maintain permanent pools which support aquatic life

Exhibit D

Volunteer Water Quality Monitors

Stream Team volunteer water quality monitors are trained citizens who monitor stream health in Jefferson County and throughout the state of Missouri. According to Mark Van Patten, Streams Coordination Biologist, there are currently 156 Stream Teams in Jefferson County. Their work helps to protect the water quality in waterways and lakes as well as help protect the quality of life for all living creatures in a watershed, human and animal alike.

Water Quality Monitors are trained to do the following:

- Conduct macroinvertebrate counts in wadeable streams. Different insects have different tolerances for pollution, so they can give us a very good idea about water quality by their presence or absence in a stream.
- Perform stream discharge measurements.
- Check air and water temperature.
- Monitor pH and conductivity levels.
- Test the clarity of the water by checking the turbidity level.
- Perform chemical testing for nitrate levels in the stream.
- Test for the amount of dissolved oxygen in the water and determine the percent of oxygen saturation.
- Test for chlorides, ammonia levels, phosphates, hardness, or alkalinity.

(Source: www.dnr.mo.gov/env/wpp/watersheds.htm)

By comparing test results over a period of time, monitors can determine what new pollutants were introduced to a waterway, when pollutants were introduced, and approximately where pollutants entered the waterbody. Further testing of aquatic life can determine the affect specific pollutants have on stream health. The following table lists Stream Team monitoring locations and water testing results in Jefferson County waterways.

Missouri Stream Team Monitoring Program
Locations Monitored in Jefferson County

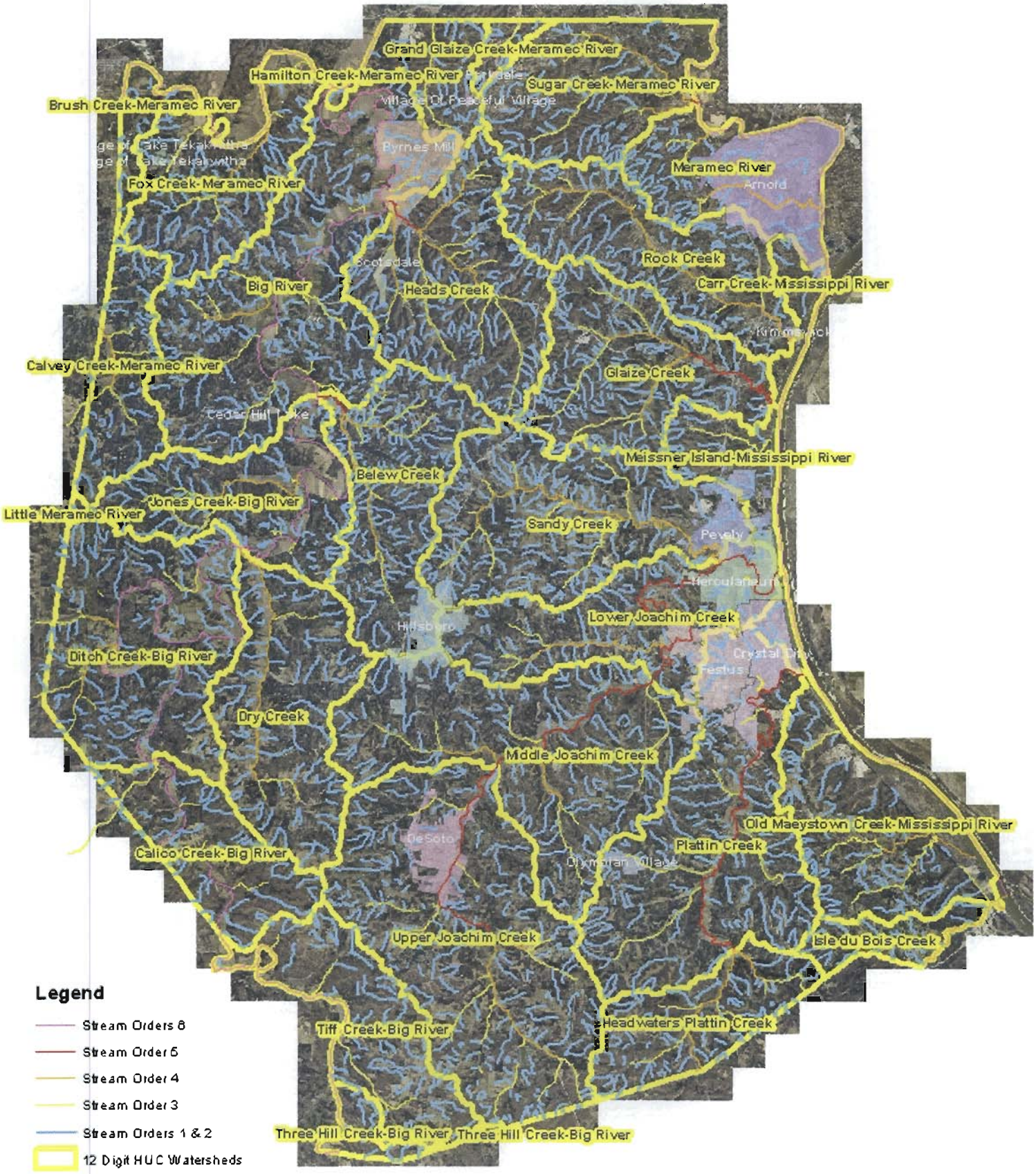
Latest recorded chemical data for sites monitored in Jefferson County

Date of Sample	Loc No	Stream Name	Time Of Sample	Water Temp °C	Air Temp °C	Dissolved Oxygen (mg/L)	Oxygen Saturation %	pH	Nitrate as N (mg/L)	Ammonia as N (mg/L)	Phosphate PO4 (mg/L)	Conduct-ivity (umhos/cm)	Turbidity (JTU)
9/05	5431	Belew	850	16	14	8	81	8	0.5	0.77	0.27	400	400
10/05	5384	Belew	1110	17	18	6	62	7.8	8	0.18	2.9	910	10
10/05	5424	Belew	920	16	19	11	112	8.8	10	0.12	3.3	1130	10
3/95	2633	Belew	1320	10	20	10.5	98	8.2	0.2	0.2			
10/08	3308	Big R.	1250	16	20	13	132	8.2	0.25	4.696	0.22	530	10
10/05	5444	Big R.	1130	12	11	15	139	8.5				300	13
9/95	2631	Big R.	1400	16.1	16.1	8	81	8.1	0.25			560	
10/07	5430	Big R.	910	24	25	8	95	7.8	0.25			530	13
3/94	4181	Big R.	15.45	6	18	14	113	9	0.019				
3/94	3802	Big R.	1430	10	29	13	115	8.6	0.019				
9/06	386	Big R.	1000	25	20	11	133	7.7	0.12			540	10
10/08	14	Big R.	1155	15	15	10	99	8	0.25	0.147	0.23	530	10
1/09	2710	Big R.	1540	4	6.5	11	84	8.1	0.25			540	10
9/05	4779	Big R. S1	1010	20	12	8	88	8	0.125	0.14	0.48	420	85
8/05	5417	Black	1007	27				7.8				730	
10/95	2632	Dry Ck		16.1	15.5			7.8	0.25			520	
9/97	461	Dry Ck	1000	18	20			8.2	0.125			460	
4/09	4450	Dry Ck	1400	15	28	12	119	8.5	0.25			650	10
9/05	5425	Galligher	1110	20	24	5	55	8	6		3.4	990	10
10/96	2704	Heads	1000	15	12	7	70	7.5	0.25			560	
10/96	2705	Heads	900	6.6	3.3	8	66	7.4	0.5			300	
10/99	305	Joachim	1330	17	26	11	114	7.9	0.25			440	
2/95	3828	Joachim	1220	9	24	16	139	8.6				220	
7/95	3436	Joachim	1100	22	26	7	80	8	0.2	2		580	
9/93	3435	Joachim	1230	24.4	27.8	11	131	8					
9/01	78	Joachim	900	21	26	8	90	8.9	0.125	0.4		250	
9/08	6437	LaBarque	1345	18	25	11	116	7.5	0.25			280	
4/06	4292	LaBarque	1000	16	19	8	81	7.6	0.125			370	10
4/09	5152	LaBarque	1335	8	10	12	101	8			0.15	340	10
9/08	163	LaBarque	1445	19	25	9	97	7.9				370	10
4/07	5284	LaBarque	923	5	1	13	102	8.2	0.125		0.43	380	10
4/09	4890	LaBarque	1220	8.5	14.5	13	111		0.25	0.025	0.29	410	10
4/07	5805	LaBarque	915	4	-3	13	97	6.2	0.125	0		170	10
4/07	5416	LaBarque	845	4	0	12	92	8.5	0.25			550	
4/07	5866	LaBarque	900	4	3	13	99	7.9				240	10
4/08	6147	LaJolla Sp.	1130	14	19	11	107	7.8	0.25	0	0.49	210	18
9/94	3816	Little Ck	1400	20	26.7	5	55	7.8				680	
8/96	133	Little Ck	900	21.1	26.1	5	56	8	0.25			460	
10/04	2073	Meramec	1330	17	21	7	73	7.8	0.25	0.11		480	23
6/94	3990	Meramec	1115	25	27	8	97	8.4	0.129				
10/02	4487	Meramec	1145	19	15	9	97	8.4	0.375			405	28
10/08	5102	Meramec	1620	16.5	16	10	103	8.37	0.25		0.05	350	10
5/09	4664	Meramec	1400	17	12			8.4				280	
3/09	5124	Meramec	1500	14	25	13	126	8.4	0.2			410	40
4/98	614	Plattin	1420	14	19	13	126	7.9	0.25			410	10
4/96	2682	Plattin	1515	13.3	21.1	9	86	7.9	0.25			260	
10/04	1059	Pomme	1500	13	17	10	95	8	0.25	0.03		650	16

Latest recorded chemical data for sites monitored in Jefferson County													
Date of Sample	Loc No	Stream Name	Time Of Sample	Water Temp °C	Air Temp °C	Dissolved Oxygen (mg/L)	Oxygen Saturation %	pH	Nitrate as N (mg/L)	Ammonia as N (mg/L)	Phosphate PO4 (mg/L)	Conduct-ivity (umhos/cm)	Turbidity (JTU)
10/07	5268	Pomme	1130	25.7	30	8	99	7.9	1	0.48	0	720	
7/09	306	Rock	930	20	23	8	88	7.3	0.25			550	10
4/07	535	Rock		724				7.5				340	70
9/08	2302	Rock	1435	22	29	9	103	8.2	0.5			540	10
9/02	1236	Rock	1620	18	17	7	74	8.2	0.5		0.5		510
10/07	999	Rock		18	17	8	85	8.3	0.25			600	12
12/04	4660	Saline	1330	3	8	17	176	7	0.125	5		890	
4/09	5184	Saline	1307	17	18	10	104	7.8	0.5	0.135	0.4	740	
9/07	4696	Sandy Ck	230	18	20	13	138	8.6	1			646	10
9/05	5427	Sand Ck	1500	31	29	7	94	7.4	0.25	0.01	0.22	470	10
4/09	5939	Trib to LaBarque	1215	8	13	17	144		0.25			210	11
11/05	5452	Trib to Heads Ck	850	13	14			7.	0.125		0.33	850	
6/08	6226	Trib to LaBarque		20	22				0.25			360	
4/09	5960	Trib to LaBarque	1100	9	14	12	104	7.7	0.25			110	
4/09	4646	Little Ck	1150	15	21.5	11	109	8.6	0.25			470	10
9/05	5426	Sand Ck	1345	17	30	11	1114	8.1	0.5	0.07	0.24	330	
4/07	5865	Trib to LaBarque	840	4	-1	12	92	7.2	0.125	0	0.18	280	10

Source: http://www.mostreamteam.org/aims_wqmselect/select_chemresults.asp?LOC_NUM=

Jefferson County Watersheds and Stream Orders



OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Sub watershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ River
- ☐ Creek
- ☐ Open Space
- ☐ Institutional

Other: _____

Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

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

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ 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
Conductivity		uS	ECTester11
Total Suspended Solids		Mg/L	Hach DR/890 meter
Aluminum		Mg/L	Hach DR/890 meter
Chlorine		Mg/L	Hach DR/890 meter
Nitrite		Mg/L	Hach DR/890 meter
Phosphorus		Mg/L	Hach DR/890 meter
Hardness		Mg/L	Hach DR/890 meter
Turbidity		FAU	Hach DR/890 meter
Nitrogen Ammonia		mg/L	Hach DR/890 meter

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	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 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	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ 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?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

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

Jefferson County

The purpose of this submittal is to define the goals Jefferson County has developed to continue the progress and reflect the performance of the NPDES program in unincorporated Jefferson County through the 2013-2018 permit cycle. The goals were chosen to address the specific stormwater concerns within Jefferson County's jurisdiction.

Jefferson County has a Charter form of government and is led by a County Executive and seven County Council members. Jefferson County finances and supports the local government office (Stormwater Division) that has enforcement authority over the provisions outlined in the NPDES MS4s permit. Chapter 505, Article II, Section 505.140-B of Jefferson County Code of Ordinances contains those provisions that address both land disturbance activities and stormwater management requirements specified in the NPDES permit. This Article states, *"To be in compliance with the Phase II National Pollutant Discharge Elimination System (NPDES) as mandated through the Clean Water Act, specific activities shall be undertaken and regulated by the County."*

Permittee Status

Jefferson County and five co-permittees (Byrnes Mill, Crystal City, Festus, Herculaneum and Pevely) are considered Phase II MS4s under the NPDES Permit program and, therefore, share General Operating Permit Number MO-R040052. This permit requires that this jurisdiction develop, implement and enforce a stormwater management program designed to reduce the discharge of pollutants from Municipal Separate Storm Sewer Systems (MS4s) to the maximum extent practicable (MEP) to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act. Because of our co-permittee status, Jefferson County and the five co-permittees will be guided by the Stormwater Management Plan submitted with this application.

Improvements in Water Quality

Jefferson County is proud of the effort made by three active partnership groups who seek to improve water quality within their watershed by defining objectives in a watershed plan and actively working the plan. Community education and involvement is vital to the welfare of Jefferson County's water resources.

Local ordinances regulate the major water pollutant sources – failing septic systems and erosion/sediment. *Title VII – Utilities, Chapter 705 of the Code of Ordinances* provides the stringent requirements of the *On-Site Sewage Treatment Code*:

"This code is designed and enacted for the purpose of protecting public health, safety and welfare, preserving the environment, controlling the causes of disease and infection, controlling the pollution of land and water by requiring minimum standards governing the use, location, design, construction, installation, alteration, repair, maintenance, and treatment of on-site sewage treatment systems by

providing for the issuance of permits for such activities, by authorizing inspection, by providing for fees and by providing penalties for violation of these regulations."

Title V – Chapter 505 - Erosion and Sediment Control/Stormwater Management describes the regulatory requirements designed to preserve water quality during construction, post-construction and land disturbance activities by keeping pollutants on-site or detained.

The remainder of this section lists goals for the new permit cycle and contains a list of outfalls by description and maps showing stream orders and outfalls by watershed.

MCM 1: Public Education and Outreach - Rationale for New Goals

The main objective of the goals established for Public Education and Outreach Program is to expand the distribution of knowledge regarding water quality and methods of protection.

To better evaluate the effectiveness of the Public Education and Outreach program, it is beneficial to record the number of people who have been exposed to educational materials and presentations. Jefferson County can expand the area of distribution of materials to other public buildings such as libraries in an effort to reach a broader audience. Jefferson County will continue to develop and share educational water quality messages with co-permittees who may not have the time, personnel or programs available to produce material of their own.

Since the Stormwater Management Division website does not record the number of visitors to the site, the number of calls, complaints or requests received as a result of visiting the site can be manually recorded as well as what information was passed along to the caller.

The Stormwater Management Staff can help address the number one pollutant source in unincorporated areas by providing educational booklets to the Code Enforcement Sewer Inspector for distribution to homeowners explaining proper care and maintenance of septic systems as well as the steps necessary to replace a failing system and/or regulatory procedures. Some information is available through EPA. Specific publications are available through EPA for this purpose: *"Homeowners' Guide to Septic System Maintenance"* and the *"Septic Smart Brochure"*.

Watershed Partnership groups can expand their knowledge and commitment by becoming involved in the goals of the Stormwater Management Plan. The reach of messages in educational programs will be broadened over entire watersheds with the help of these watershed partnerships.

MCM 1: Public Education and Outreach				
Permit Goal	BMP Goal Selected	Permit Year	Measurement Method	Responsibility
E	Report the number of educational materials distributed to improve water quality	Annually	Number of educational pieces distributed.	Stormwater Management Staff
E	Report the number of presentations on water quality and nonpoint source pollution education	Annually	Number of presentations given and number of participants at each one.	Stormwater Management Staff
C	Maintain the Stormwater Management Division website with educational materials and presentations	Annually	Number of calls or questions or requests for information from visiting the website	Stormwater management Staff
D	Jefferson County will distribute educational materials on relevant topics through their offices, public libraries, or other service oriented businesses.	Annually	Number of pieces distributed and number replenished.	Stormwater Management Staff
A-B	Develop literature on the effect failing septic systems have on water quality, maintenance of systems, steps to replace failing systems or alternative and how to choose a system.	1 - 2	Number of booklets distributed to owners identified as having failing systems.	Stormwater/ Code Enforcement
D	Develop water quality messages as needed by co-permittees	2 thru 5	Number of messages developed and distributed.	Stormwater Management Staff
C	Develop literature/presentation explaining the stormwater management plan concept to promote involvement. Present to watershed groups.	4 - 5	Number of people participating in plan development.	Stormwater Management Staff

MCM 2: Public Involvement and Participation - Rationale for New Goals

Jefferson County believes watershed-based management of stormwater and pollutants accomplishes the requirements of this MCM on a larger scale and to a more accurate degree. The watershed approach is based on the geographic landscape where contributors to pollutants can be detected from within the watershed.

MCM 2: Public Involvement ant and Participation				
Permit Goal	BMP Goal Selected	Permit Year	Measurement Method	Responsibility
A	Involve Belews Creek, Sandy Creek, LaBarque Creek & new watershed partnerships in development of SWMP and planning yearly public participation activities	Annually	Number of meetings and participants involved.	Stormwater
D	Facilitate, as needed, semi-annual stream cleanup events with Belews, Sandy and other watershed partnerships	Annually	Number of cleanups and number of participants at each one.	Stormwater
C	Participate in and support water quality testing by stream teams and watershed partnerships	Annually	Number of water quality monitoring events and participants at each one	Stormwater
B	Participate as County representative in monthly citizen led watershed partnership meetings	Annually	Number of meetings attended	Stormwater
D	Inform watershed partnerships of grant opportunities and support application preparation	Annually	Number of grant opportunities forwarded to partnerships	Stormwater
B	Facilitate the formation of new watershed partnerships	1 thru 5	Number of new watershed partnerships formed	Stormwater
A	Support the public participation activities identified by watershed partnerships	1 thru 5	Number of activities	Stormwater
B	Organize a Jefferson County wide coalition of watershed partnerships	Year 3	Month/year first meeting conducted	Stormwater

MCM 3: Illicit Discharge Detection and Elimination - Rationale for Goals

Jefferson County will continue to inspect outfalls and streams to monitor any pollutant influence that may arise from year to year and to note changes that may occur in stream characteristics such as bank degradation, sedimentation, channel movement, etc.

Site plans and land disturbance permit applications will be reviewed for compliance with the regulatory requirements established in the Erosion and Sediment Control and Land Disturbance Manual - Chapter 505 of Jefferson County's Code of Ordinances. This is to assure that proposed developments include devices that protect waterways and water quality from the effects of land use changes by utilizing BMPs or LID practices that address increases in stormwater runoff on-site.

Mapping of storm sewers and detention ponds will help address runoff problems, and monitor maintenance schedules in older subdivisions. As these devices age and homeowners change, locations are lost and maintenance is neglected. Mapping these devices will provide a historical record for issues that arise. The same is true for keeping track of structural and non-structural designs in new development. Should these devices be destroyed or neglected, Jefferson County will have a mapped record that the BMP or LID was planned and in place to handle stormwater runoff issues.

MCM 3: Illicit Discharge Detection and Elimination				
Permit Goal	BMP Goal Selected	Permit Year	Measurement Method	Responsibility
A	Visually inspect one-fifth of NPDES Phase II outfalls.	Years 1-5	# of outfalls	Stormwater
C & E	Visually inspect 3 miles of a stream order three	All Years	# of miles inspected	Stormwater
B & C	Review site plans for compliance with Chapter 505. Erosion and Sediment Control Manual	All Years	# of plans reviewed	Stormwater
B & C	Review and issue land disturbance permits in compliance with Chapter 505. Erosion and Sediment Control Manual	All Years	# of applications reviewed	Stormwater
B & C	Prepare the protocols/procedures for internal handling of violations of Chapter 505. Erosion and Sediment Control Manual	Year 1	Protocol/Procedure completed	Stormwater
B & C	Review protocols/procedures for violations and update as needed.	Years 2-5	Protocol/Procedure updated	Stormwater
C & E	Develop a comprehensive map of storm sewers and detentions of older subdivisions utilizing GPS coordinates and GIS mapping.	All Years	Number of subdivisions mapped.	Stormwater

MCM 4: Construction Site Stormwater Runoff Control - Rationale for Goals

Jefferson County Stormwater Division works with the Code Enforcement Division, the Public Works Department and the Planning and Zoning Division to fulfill the requirements of the regulatory ordinance, Chapter 505 of the Code of Ordinances. To help streamline the paper flow, compliance procedures and protocols will be prepared and reviewed for each step of the construction site review process. It is common practice that all construction site plans are reviewed for sufficient stormwater controls and land disturbance activities.

Developers and contractors are hesitant to incorporate new LID devices in site plans because they are not really familiar with various site specific options. To encourage developers and contractors to incorporate BMP and LID structures in site plans, guidance material will be prepared outlining LID options with a design appendix and buffer strip enhancement plans for sites near waterways.

Training is a big part of the inspection process that helps keep active construction on point. Therefore, each year, the Stormwater staff will host a training session for all staff involved in active construction site inspections. This session will illustrate BMP and LID devices, the reason for each, and good housekeeping techniques.

MCM 4: Construction Site Storm Water Runoff Control				
Permit Goal	BMP Goal Selected	Permit Year	Measurement Method	Responsibility
B	Host training session for inspectors (Public Works and Building) on land disturbance and stormwater requirements associated with construction activity	Annually	# of sessions held	Stormwater
B	Review field inspector checklists to ensure they continue to meet the monitoring needs/requirements	Annually	Checklist reviewed	Stormwater, Code Enforcement and Public Works
C	Prepare procedures/protocols for site plan review for compliance with Chapter 505	Year 1	Procedure/protocol written	Stormwater and Planning
C	Review procedures/protocols for site plan review for compliance with Chapter 505	Year 2-5	Procedure/protocol reviewed	Stormwater and Planning
E	Prepare procedures/protocols for inspection of active sites with land disturbance permits for compliance with Chapter 505	Year 1	Procedure/protocol written	Stormwater

E	Review procedures/protocols for inspection of active sites with land disturbance permits for compliance with Chapter 505	Years 2-5	Procedure/protocol reviewed	Stormwater
E	Prepare procedures/protocols for release of land disturbance escrow and closure of land disturbance permits	Year 1	Procedure/protocol written	Stormwater and Planning
E	Review procedures/protocols for release of land disturbance escrow and closure of land disturbance permits for compliance with Chapter 505	Year 2-5	Procedure/protocol reviewed	Stormwater and Planning
A-E	Review Chapter 505, the regulatory ordinance for any revisions	Years 1-5	Review completed	Stormwater
C	Prepare information for developers on LID options related to site development and stream buffer enhancement plan designs	Years 1-2	Information prepared and distributed	Stormwater
D	Prepare procedures/protocols for processing of complaints	Year 1	Documents written	Stormwater
D	Review procedures/protocols for processing of complaints	Year 2 – 5	Documents written	Stormwater
A	Complete site plan reviews for sufficient stormwater controls	Annually	Percentage of plans submitted	Stormwater
E	Complete inspections of lots under one acre to determine if appropriate E/S controls and BMPs are in place	Annually	Number of sites visited	Stormwater
C	Encourage developers to incorporate LID designs on site plans by creating a design appendix ideas to address stormwater issues on-site	Year 2-5	Number of site plans incorporating LID practices	Stormwater and Planning

MCM 5: Post Construction Stormwater Management - Rationale for Goals

The main objective of the goals established for Post-Construction is to expand, distribute and inform the public, engineers, developers and property owner's knowledge regarding the importance of BMPs structural and non-structural and the importance of establishing them and maintaining them to improve water quality and impact on the environment and neighboring property.

Previous sections of this management plan deal with activities carried out by Jefferson County and its co-permittees in the implementation of the Stormwater post-construction program. The goals of this plan involve ongoing reporting of the program measures and educational efforts to enhance the compliance of the existing program.

The SWMP will address several goals relating to education of the public and developers. This seems to be the key to maintaining an effective post-construction BMP program. Education efforts will continue to promote the use of structural and non-structural BMPs and the benefits of Stormwater management planning prior to any land disturbance. Jefferson County and its co-permittees plan to distribute educational material and training to developers, home owners associations and property owners, and will maintain and promote its on-line educational material and educational handouts that address BMP planning, design and maintenance.

To ensure the proper operation and maintenance of BMPs, education of the public will focus on the responsibilities of the owners and subdivision trustees. The public's understanding of how important of a role the BMPs perform, protect and ensure water quality will be key to ensuring the acceptance of the BMPs by the public, ensuring that the BMPs are properly maintained and continue to function properly for the owners and the subdivision trustees. A similar educational program will be established for design professionals and developers.

MCM 5: Post Construction Stormwater Management

Permit Goal	BMP Goal Selected	Permit Year	Measurement Method	Responsibility
A - G	Provide educational programs for subdivision property owners and Home Owners Associations (HOA) regarding the importance and advantages of maintaining stormwater facilities and as builts.	All years	# of meetings completed and number of people attending.	Stormwater
G	Provide LID design maintenance schedule and manual to HOAs regarding upkeep of structural and non-structural BMPs and LID devices on-site.	Years 2-5	Number of schedules and manuals given to subdivisions.	Stormwater
D	Complete inspection of individual lots under an acre to determine if appropriate E/S controls and BMPs are in place.	All years	Percent of building permits issued.	Stormwater
C - F	Ensure that as-builts are turned over to property owner or HOA along with an understanding of the maintenance requirement.	All years	Number of plans released describing location of required as-builts.	Stormwater
B – C – D E	Continue to revise as necessary the regulatory ordinance - Chapter 505	All years	Number of revisions necessary	Stormwater
C	Conduct educational training programs for code enforcement and public works inspectors regarding required BMPs and as-builts.	All years	Number of inspectors trained	Stormwater
C	Import stormwater structural and non-structural designs into GIS for new development from AutoCAD details	All years	Number of files received with AutoCAD details	Stormwater

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations – Rationale for Goals

Jefferson County will prepare a SWPPP for each of its municipal operations sites to outline procedures that will address stormwater inundation, spills, sensitive areas, and pollutants. The plan will expose pollutant sources and be a learning tool for on-site staff as techniques are implemented and standard operations are revised.

Along with the SWPPPs, Public Works will continue to develop and implement training programs to educate employees on how to incorporate good housekeeping and pollution prevention techniques into municipal operations such as highway, bridge, fleet, and building maintenance. Attention will be given to recognizing and developing structural and non-structural BMP strategies and how they improve water quality. Good housekeeping techniques will be practiced throughout the permit term as part of the standard operating procedure.

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

Permit Goal	BMP Goal Selected	Permit Year	Measurement Method	Responsibility
A,B,C, E, F, G	Complete a SWPPP for each Municipal Operations facility. Update as needed	1 - 5	SWPPPs completed	Public Works
H	Provide a training program to staff regarding prevention and reduction of stormwater pollution from activities associated with maintenance, fleet, new construction and land disturbances	1 - 5	Number of training programs conducted and number attending each training program.	Public Works
D	Practice good housekeeping practices as outlined below:	Annually		
	Highway: **Road Sweeping Program:** Sweep after winter & prior to pavement striping. Sweep after seal coating roads. **Ditch Maintenance Program:** conduct yearly inspections and clean when necessary. **Salt Storage:** Store road salt inside buildings. Calibrate salt spreaders as necessary. **Lubricants:** Store used lubricants in tank within a containment area. Dispose of used lubricants with approved vendor. **Vehicle & Equipment Washing:** Trap oil & sediment before releasing water to storm drain. **Vehicle & Equipment Fueling:** Store fuels within a containment area; maintain shutoff nozzles and breakaway valves on fuel hoses. Train employees in proper fueling and cleanup procedures.		# miles swept Log of inspections Log of Calibrations Log of Disposals Procedures Established # employees trained	Highway Highway Highway Highway Highway Highway

Permit Goal	BMP Goal Selected - continued	Permit Year	Measurement Method	Responsibility
	Waste Disposal: Use approved commercial waste hauler and landfill	Annually	Log of Disposals	Highway
	Storm Sewer Inlet Inspection Program: conduct yearly inspections and clean when necessary.		Log of Inspections	Highway
	Herbicide Application Program: use proper type of herbicide; track and limit use.		Log of Usage	Highway
	Adopt-A-Road Program on County Roads: Maintain program for adoption/cleanup.		Log of Participants	Highway
	Facilities:			
	Vehicle & Equipment Fueling: Train employees in proper fueling and cleanup procedures. Use commercial sites for fueling.		# employees trained	Facilities Manager
	Vehicle & Equipment Washing: Off-site commercial sites used for washing.		Log of sites	Facilities Manager
	Waste Disposal: Use approved commercial waste hauler and landfill. Waste materials stored in proper, leak-proof containers.		Log of disposals	Facilities Manager
	Fleet:			
	Vehicle & Equipment Fueling: Train employees in proper fueling and cleanup procedures. Use commercial sites for fueling.		# employees trained	Fleet Manager
	Lubricants: Store used lubricants in tank within a containment area. Dispose of used lubricants with approved vendor.		Log of disposals	Fleet Manager
	Vehicle & Equipment Repairs: Absorbent materials used on spills as opposed to hosing down. Waste materials stored in proper, leak-proof containers. Used tires disposed at approved tire shredder.		Procedures Established	Fleet Manager
	Vehicle & Equipment Washing: Trap oil & sediment before releasing water to storm drain.		Procedures Established	Fleet Manager
	Waste Disposal: use approved commercial waste hauler and landfill.		Log of disposals	Fleet Manager

Implementation Schedule

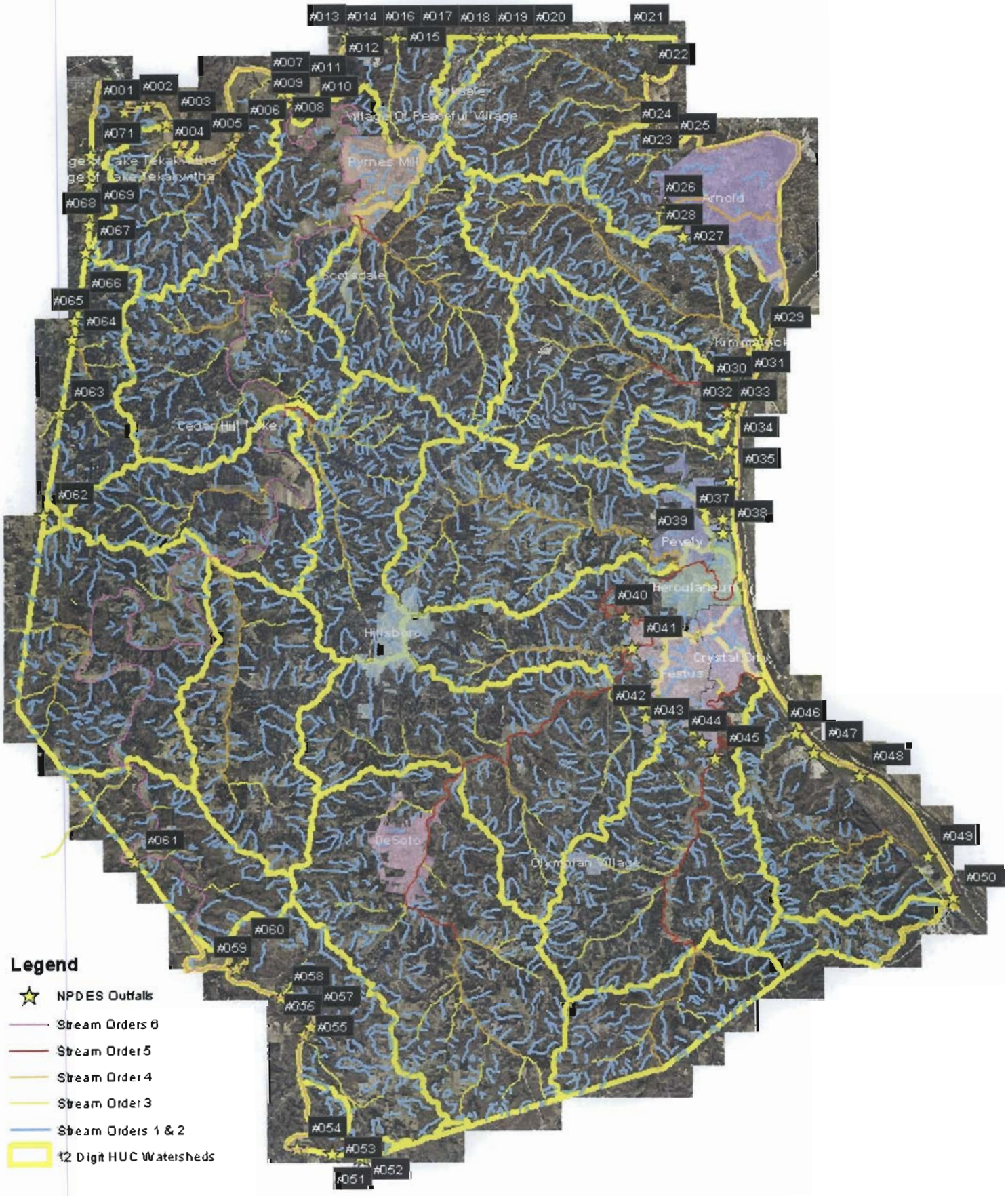
The following Implementation Schedule contains a summary of BMPs and estimated completion period. Most of the BMPs and tasks are scheduled as either annual events or ongoing activities. This schedule is subject to modification as the program proceeds and evolves throughout the permit term.

BMP 5-Year Implementation Summary	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
MCM 1: Public Education and Outreach						
Report number of educational materials distributed	Stormwater	X	X	X	X	X
Report number of presentations on water quality and pollution	Stormwater	X	X	X	X	X
Update the Stormwater website with educational material	Stormwater	X	X	X	X	X
Distribute educational materials through libraries and businesses	Stormwater	X	X	X	X	X
Develop literature on failing septics	Stormwater	X	X			
Develop water quality messages as needed by co-permittees	Stormwater		X	X	X	X
Develop presentation about SWMP to promote involvement	Stormwater				X	X
MCM 2: Public Involvement and Participation						
Involve watershed partnerships in SWMP development	Stormwater	X	X	X	X	X
Facilitate stream team cleanup events with watershed groups	Stormwater	X	X	X	X	X
Participate water quality testing by stream teams and watershed groups	Stormwater	X	X	X	X	X
Participate as representative in monthly meetings of watershed groups	Stormwater	X	X	X	X	X
Inform watershed partnerships of grant opportunities and support application prep.	Stormwater	X	X	X	X	X
Facilitate formation of new watershed partnerships	Stormwater	X	X	X	X	X
Organize a county-wide coalition of watershed partnerships	Stormwater			X		
MCM 3: Illicit Discharge Detection and Elimination						
Visually inspect one-fifth of outfalls	Stormwater	X	X	X	X	X
Visually inspect 3 miles of stream orders	Stormwater	X	X	X	X	X
Review site plans for compliance with Chapter 505	Stormwater	X	X	X	X	X
Prepare procedures for internal handling of violations of Chapter 505	Stormwater	X				
Review procedures for violations and update as needed	Stormwater		X	X	X	X
Develop a map of storm sewers and detentions of older subdivisions	Stormwater	X	X	X	X	X
Import structural and non-structural designs into GIS	Stormwater	X	X	X	X	X
MCM 4: Construction Site Storm Water Runoff Control						
Host training session for inspectors on stormwater requirements	Stormwater	X	X	X	X	X
Review field inspector checklists to ensure they meet monitoring needs	Stormwater	X	X	X	X	X
Prepare procedures for site plan review for compliance with Chapter 505	Stormwater	X				
Review procedures for site plan review for compliance with Chapter 505	Stormwater		X	X	X	X

BMP 5-Year Implementation Summary - continued	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Prepare procedures for inspection of active sites with LD permits	Stormwater	X				
Review procedures for inspection of active sites with LD permits	Stormwater		X	X	X	X
Prepare procedures for release of LD escrow and closure of LD permits	Stormwater	X				
Review procedures for release of LD escrow and closure of LD permits	Stormwater		X	X	X	X
Review chapter 505 for any revisions	Stormwater	X	X	X	X	X
Prepare information for developers on LID options regarding site dev. and buffers	Stormwater	X	X			
Complete site plan reviews for sufficient stormwater controls	Stormwater	X	X	X	X	X
Complete inspections of lots < one acre to assure E/S & BMPs are in place	Stormwater	X	X	X	X	X
Create appendix ideas of LID designs for developers	Stormwater		X	X	X	X
MCM 5: Post-Construction Storm Water Management						
Prepare educational programs for HOAs about stormwater facilities	Stormwater	X	X	X	X	X
Provide LID design maintenance schedule and manual to HOAs	Stormwater		X	X	X	X
Complete inspection of individual lots <one acre for E/S controls and BMPs	Stormwater	X	X	X	X	X
Ensure as-builts are turned over with understanding of maintenance requirement	Stormwater	X	X	X	X	X
Continue to revise Chapter 505 as necessary	Stormwater	X	X	X	X	X
Conduct educational programs for inspectors about BMPs and as-builts	Stormwater	X	X	X	X	X
MCM 6: Pollution Prevention and Good Housekeeping – Public Works						
Complete a SWPPP for each Municipal Operations facility	Public Works	X	X	X	X	X
Provide a training program to staff regarding prevention and reduction of stormwater pollution from activities associated with municipal operations	Public Works	X	X	X	X	X
Practice good housekeeping practices as outlined below:						
Highway						
Road sweeping program: Sweep after winter and prior to pavement striping. Sweep after seal coating roads	Highway	X	X	X	X	X
Ditch Maintenance Program: Conduct yearly inspections and clean when needed	Highway	X	X	X	X	X
Salt storage: Store salt inside buildings. Calibrate salt spreaders as necessary	Highway	X	X	X	X	X
Lubricants: Store lubricants in tank within a containment area. Dispose of used lubricants with approved vendor	Highway	X	X	X	X	X
Vehicle and Equipment Washing: Trap oil and sediment before releasing to the storm drain.	Highway	X	X	X	X	X

BMP 5-Year Implementation Summary - continued	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Vehicle and Equipment Fueling: Store fuels with a contaminate area; maintain shutoff nozzles and breakaway valves on fuel hoses. Train employees in proper fueling and cleanup procedures.	Highway	X	X	X	X	X
Waste Disposal: Use approved commercial waste hauler and land fill	Highway	X	X	X	X	X
Storm Sewer Inlet Inspection Program: Conduct yearly inspections and clean as needed	Highway	X	X	X	X	x
Herbicide Application Program: Use proper type of herbicide (environmentally friendly), track and limit use	Highway	X	X	X	X	X
Adopt-A-Road Program on County Roads: Maintain program for adoption/cleanup.	Highway	X	X	X	X	X
Facilities						
Vehicle & Equipment Fueling: Train employees in proper fueling and cleanup procedures. Use commercial sites for fueling.	Facilities Manager	X	X	X	X	X
Vehicle & Equipment Washing: Off-site commercial sites used for washing	Facilities Manager	X	X	X	X	X
Waste Disposal: Use approved commercial waste hauler and landfill. Waste materials stored in proper leak proof containers	Facilities Manager	X	X	X	X	X
Fleet						
Vehicle & Equipment Fueling: Train employees in proper fueling and cleanup procedures. Use commercial sites for fueling.	Fleet Manager	X	X	X	X	X
Lubricants: Store used lubricants in tank within a containment area. Dispose of used lubricants with approved vendor.	Fleet Manager	X	X	X	X	X
Vehicle & Equipment repair: Absorbent materials used on spills as opposed to hosing down. Waste materials stored in proper leak proof containers Used tires disposed of with approved tire shredder	Fleet Manager	X	X	X	X	X
Vehicle & Equipment washing: Trap oil and sediment before releasing water to the storm drain	Fleet Manager	X	X	X	X	X
Waste Disposal: Use approved commercial waste hauler and land fill	Fleet Manager	X	X	X	X	X
LEGEND: ● = completed ■ = ongoing						

Jefferson County NPDES Outfalls



Byrnes Mill

The purpose of this submittal is to define the goals Byrnes Mill will achieve to continue the progress and performance of the NPDES program through the 2013 – 2018 permit cycle. The goals were chosen to address the specific stormwater concerns within the Byrnes Mill community.

The City of Byrnes Mill is 5.26 square miles of which 5.14 square miles is land and 0.12 square miles is water. Byrnes Mill is located on Highway 30, about 11 miles SW of the intersection of Highway 30 and Interstate 270. The City has several miles of frontage on the Big River and is part of three watersheds: Big River, Heads Creek and the Hamilton Creek-Meramec River. The population of Byrnes Mill in 2010 was 2,781 with an estimated 1,038 households.

The city government of Byrnes Mill includes a Mayor, and Board of Aldermen. The Public Works Director will administer the SWMP under the direction of the City Administrator with the full consent of the Board of Aldermen. As a co-permittee under Jefferson County's MS4s NPDES General Operating Permit Number MO-R040052, Byrnes Mill will follow the guidance of the Storm Water Management Plan submitted as a part of this application.

When the NPDES Phase II permit is granted, the SWMP will be executed under a Byrnes Mill City Ordinance titled Section 8.

Following is the goals set for the 2013 – 2018 permit cycle.

MCM 1: Public Education and Outreach

The purpose of this section is to educate the public on the impacts of stormwater discharges on water bodies and the steps the public can take to help reduce pollutants in stormwater runoff, thus improving water quality.

To best reach the public, Byrnes Mill will use direct and indirect approaches. Scheduled presentations, CDs, and city-wide events as well as use of the city newsletter and website are the best sources for reaching the greatest number of citizens with educational messages. Therefore, the following goals reflect those approaches.

MCM 1: Public Education and Outreach				
	BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
	Sponsor a community event each year	Annually	# of participants	Public Works
	Sponsor a presentation annually for one subdivision that addresses ways to keep pollutants out of stormwater.	Annually	# of participants	Public Works
	Write an article for each issue of the city newsletter about what the city is doing to preserve water quality.	Annually	Article written	Public Works
	Begin/update a library of resource material on the city website (or publish a directory of reference material.)	1 - 5	Log of material on site	Public Works

MCM 2: Public Involvement and Participation

The purpose of this MCM is to implement programs or dialogue that encourages public participation in improving water quality efforts.

Given the means and opportunity most citizens will do their part to help control pollutant sources. Therefore, the goals listed below not only inform the public of opportunities to get involved, but also provide the information and the means to get involved in established programs as well as suggest ways to implement water quality programs within their community. The City will utilize its resources to communicate water quality and pollution control ideas and programs to our citizens.

MCM 2: Public Involvement and Participation				
	BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
	Encourage participation in city-wide cleanups.	1 - 5	# of participants	Public Works
	Encourage participation in activities such as stream team by providing link to the website or application forms at city hall.	1 - 5	# of participants	Public Works
	Encourage HOAs to promote subdivision programs that help control polluted runoff such as a *Show-Me-Yard* program.	1 - 5	# of participants	Public Works

MCM 3: Illicit Discharge Detection and Elimination

The purpose of this MCM is to develop and implement a program that includes ordinances prohibiting illicit (illegal) sewer connections and discharges including dumping. It also requires a visual inspection of outfalls. A map and list of outfalls is located at the back of this section.

Byrnes Mill has a city ordinance that regulates and enforces illicit discharges. The types of illicit discharges can have a direct connection, or indirect connections. The sources of illicit discharges include sanitary wastewater, effluent from septic systems, car wash wastewaters, improper oil disposal, and other hazardous fluids and materials.

Byrnes Mill staff is trained to detect and correct illicit discharges using methods such as visual screening, water sampling, etc., to locate problem areas. Staff will use dye testing, tracing discharges upstream, and other methods to locate the source of the discharge. All citations issued to the offending discharger are documented.

The following goals are designed to complement the city ordinance and to educate the public about good pollution prevention practices they can use at home to prevent illicit discharges.

MCM 3: Illicit Discharge Detection and Elimination

	BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
	Visually inspect all outflow sites	1 - 5	# inspections completed	Public Works
	Assure by site inspection that any industrial and commercial sites are compliant with their NPDES permit.	2 & 4	# inspections completed	Public Works
	Provide educational literature to septic system owners that includes maintenance, repair, and replacement guidelines.	2 - 5	Number distributed	Public Works
	Review site plans for to assure compliance with stormwater ordinances.	1 - 5	Number plans reviewed	Public Works
	Begin to map location of storm drains and municipal sewer lines	3 – 5	# of storm sewers/detentions mapped	Public Works

MCM 4: Construction Site Stormwater Runoff Control

The purpose of this MCM is to develop, implement, and enforce a program to reduce stormwater runoff and pollutants from construction activities.

Bymes Mill has a city ordinance that regulates and enforces requirements that includes appropriate practices to control erosion/sediment and other pollutants at construction sites. The ordinance requires a land disturbance permit for construction sites one acre or larger (including smaller sites that are part of a larger common plan of development).

The Planning and Zoning Commission will review construction site plans to assure that adequate and appropriately sized controls are in place to keep stormwater and pollutants from adversely impacting water quality to the maximum extent practicable by emphasizing practices that provide infiltration. Reviewers will also ensure that post-construction stormwater controls are part of the preliminary design and that development plans consider the protection of sensitive areas, the buffer of water bodies, and minimize the disturbance of soils and vegetation. These considerations help to preserve and protect natural resource areas that facilitate pollutant removal and reduce runoff.

MCM 4: Construction Site Stormwater Runoff Control				
	BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
	Review all site plans for compliance with E/S Control regulatory ordinance	1 - 5	# site plans reviewed	Public Works
	Require and review SWPPPs for all development disturbing one acre or more.	1 - 5	# SWPPPs received	Public Works
	Provide a LID and BMP informational manual to help developers/contractors utilize practices in site plans	2 - 5	# distributed	Public Works
	Include a development site checklist with each permit issued.	1 - 5	# distributed	Public Works
	Assure through inspection that BMPs remain during construction.	1 - 5	# sites inspected	Public Works
	Assure from site inspection that the SWPPP is being followed.	1 – 5	# of SWPPPs checked	Public Works

MCM 5: Post Construction Stormwater Management

The purpose of this MCM is to implement and enforce a program that requires as-built structural and non-structural devices that are included in the preliminary site design to be inspected and maintained by the HOA or homeowner since post-construction BMPs are designed to treat long-term runoff from newly developed sites.

Byrnes Mill has site development requirements that include structural BMPs to catch stormwater runoff and slowly release it to a receiving stream. Non-structural devices are not required, but appropriate devices may be suggested to the land developer as permanent stormwater management practices. These devices must remain intact during development as they are part of the final inspection process.

Byrnes Mill will implement the following goals to help meet this requirement.

MCM 5: Post Construction Stormwater Management			
BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
Update regulatory ordinance with enforcement authority that requires LID and BMP structures are maintained by the homeowner or subdivision.	1 - 5	Ordinance updated & enforced	Public Works
Develop an educational tool or written guidelines for distribution to homeowners or HOAs that describes proper maintenance of BMPs and LID devices.	2 – 5	# of guidelines distributed	Publlic Works

MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations

The purpose of this MCM is to implement a program that includes pollution prevention and good housekeeping measures in municipal operations such as maintenance activities, street runoff controls, storm sewer waste disposal, and flood control management projects. Byrnes Mill will also implement a training program of municipal staff that addresses proper handling of materials, spills, accidents, stormwater pollutant sources, pollution prevention policies, and document preparation.

Good Housekeeping at municipal operation sheds are related to vehicle maintenance, washing, fueling, salt storage, and other industrial and non-industrial actions. The following goals will help achieve the purpose of this MCM.

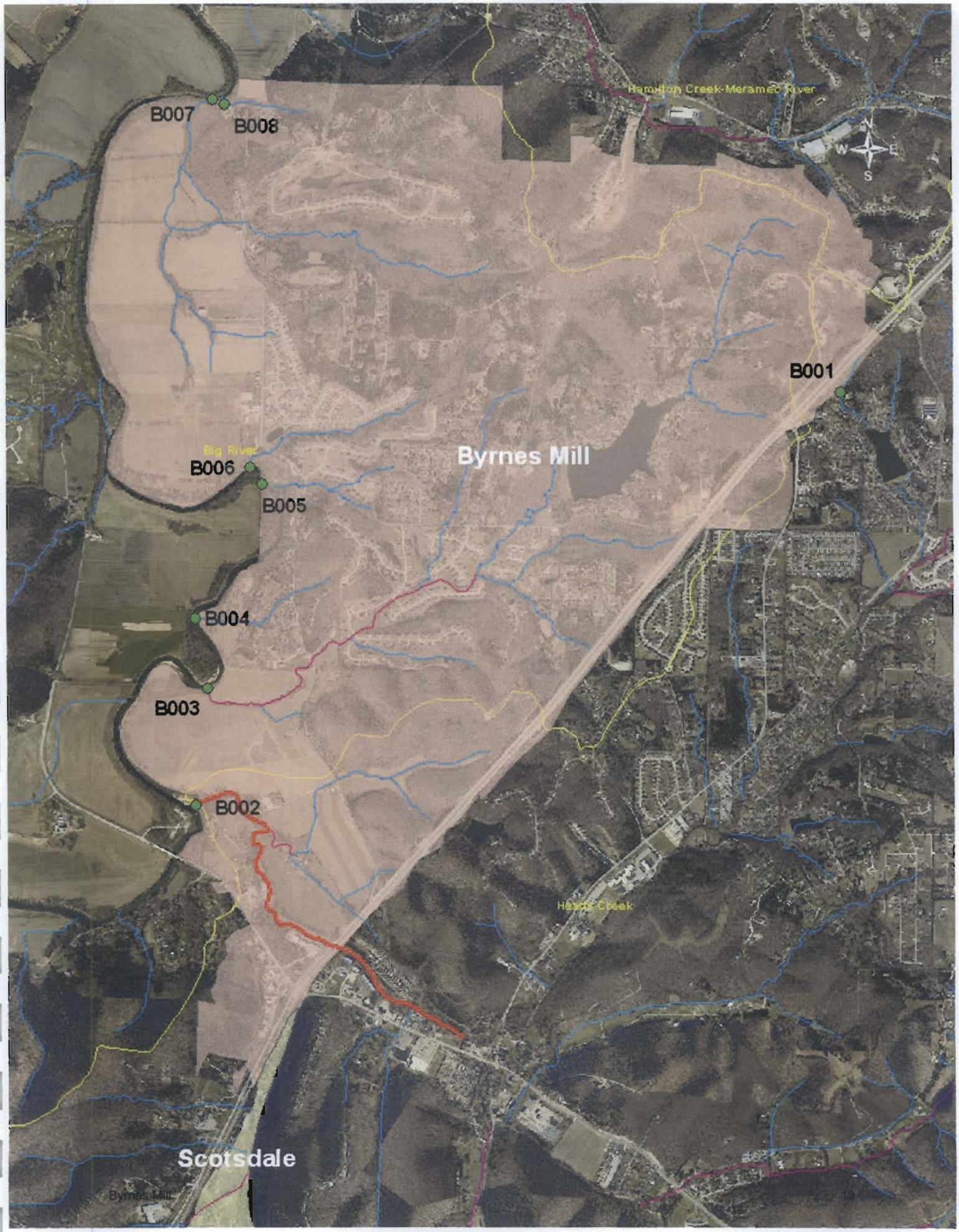
MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations			
BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
Write a SWPPP for all municipal operations facilities	3 – 5	SWPPPs completed	Public Works
Design adequate storage and mixing facility for hazardous materials. Keep adequate recordkeeping on HHW use and disposal.	1 – 5	Facility design completed & records kept	Public Works
Provide annual training to staff regarding good housekeeping practices and activities associated with maintenance operations, fleet.	1 – 5	% of employees attending	Public Works
Good Housekeeping Practices: **Road Sweeping Program:** Sweep after winter **Lubricants:** Store in containment area. Dispose of used lubricants with approved vendor. **Salt Storage:** Store road salt inside buildings. Calibrate salt spreaders as necessary. **Vehicle Fueling:** Train employees in proper fueling and cleanup procedures **Waste Disposal:** Used approved waste hauler and landfill. **Vehicle Washing:** Use off site commercial sites **Storm sewer inlet inspection:** Conduct yearly inspections and clean when necessary.	1 - 5	Log of disposal Log of disposal Log of usage Training completed Log of disposal Log of sites Log of inspections & disposal of debris	Public Works
Write procedures for proper handling, storage and disposal of hazardous materials.	1	Procedures completed	Public Works

Implementation Schedule

The following Implementation Schedule is entitled, 5-Year BMP Implementation Schedule. It contains a summary of best management practices and estimated completion period. Most of the BMPs and tasks are scheduled as either annual events or ongoing activities. This schedule is subject to modification as the program proceeds and evolves throughout the permit term.

BMP Implementation Summary - Byrnes Mill	*Responsible Dept.*	*2013-2014*	*2014-2015*	*2015-2016*	*2016-2017*	*2017-2018*
Public Education and Outreach	Public Works					
Sponsor a community event each year		X	X	X	X	X
Sponsor a presentation for one subdivision about pollution control		X	X	X	X	X
Write a newsletter article about what the city is doing to preserve water quality		X	X	X	X	X
Begin/update a library of educational resource material on the city website about water quality BMPs and pollutant sources		X	X	X	X	X
Public Involvement and Participation	Public Works					
Encourage public participation in city-wide cleanups		X	X	X	X	X
Encourage participation in stream team by providing link to their website		X	X	X	X	X
Encourage HOAs to promote subdivision programs that help control polluted runoff		X	X	X	X	X
Illicit Discharge Detection and Elimination	Public Works					
Perform visual inspection of all 8 NPDEs Phase II identified outflow sites and report findings		X	X	X	X	X
Assure industrial and commercial sites are compliant with their NPDES permit			X		X	
Provide educational literature to septic system owners that includes maintenance, repair, and replacement guidelines			X	X	X	X
Review site plans to assure compliance with stormwater ordinance.		X	X	X	X	X
Map storm drains/municipal sewer lines to help detect illicit discharges		x	x	x	x	x
Construction Site Storm Water Runoff Control	Public Works					
Review all site plans for compliance with E/S control regulatory ordinance		X	X	X	X	X
Require and review SWPPPs for all development disturbing one acre or more		X	X	X	X	X
Provide LID and BMP informational manual to help developers/contractors utilize these practices in site plans			X	X	X	X
Include a development site checklist with each permit issued.		X	X	X	X	X
Assure through inspection that BMPs remain during construction phase		X	X	X	X	X
Assure from site inspection that the SWPPP is being followed.		X	X	X	X	X
Post-Construction Storm Water Management	Public Works					
Update regulatory ordinance with enforcement authority that requires structural and non-structural BMPs are maintained by the homeowner or subdivision.		X	X	X	X	X
Develop an educational tool or written guidelines for distribution to homeowners or HOAs that describes the purpose and proper maintenance of on-site BMPs.			X	X	X	X

5 Year Implementation Summary	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Pollution Prevention and Good Housekeeping- Public Works	Public Works					
Write a SWPPP for each municipal operation facility				X	X	X
Provide annual training to staff regarding operations procedures/good housekeeping		x	x	x	x	x
Write procedures for proper handling, storage, disposal of hazardous materials		x				
Develop adequate storage and mixing facility for hazardous materials. Keep adequate recordkeeping on HW use and disposal		X	X	X	X	X
Good Housekeeping Practices:						
Road Sweeping Program: Sweep after winter		X	X	X	X	X
Lubricants: Store in containment area. Dispose of properly.		X	X	X	X	X
Salt Storage: Store road salt inside building.		X	X	X	X	X
Vehicle Fueling: train employees on proper fueling and cleanup procedures.		X	X	X	X	X
Waste Disposal: Use approved waste hauler and landfill.		X	X	X	X	X
Vehicle Washing: Use off-site commercial sites.		X	X	X	X	X
Storm Sewer Inlet Inspection: Conduct yearly inspections and clean when necessary.		X	X	X	X	X


B007
B008
Hamilton Creek-Meramec River
N
W
E
S
B001
Byrnes Mill
Big River
B006
B005
B004
B003
B002
Heads Creek
Scotsdale
Byrnes Mill

Byrnes Mill Outfalls

B001 Unnamed tributary
NW ¼, NW1/4, Sec.26, T43N, R4E
38º26'38.519"N 90º32'52.894"W
Receiving Water: Bear Creek

B002 Unnamed Tributary
US Survey 3059, T43N, R4E
38º25'19.729"N 90º35.20.515"W
Receiving Water: Big River

B003 Unnamed Tributary
US Survey 3059, T43N, R4E
38º25.42.382"N 90º35.18395"W
Receiving Water: Big River

B004 Unnamed Tributary
US Survey 3059, T43N, R4E
38º25.51.753"N 90º35.14.307'W
Receiving Water: Big River

B005 Unnamed Tributary
US Survey 3059, T43N, R4E
38º26.16.257"N 90º34'59.595"W
Receiving Water: Big River

B006 Unnamed Tributary
US Survey 3059, T43N, R4E
38º26.19.399"N 90º35.8.385"W
Receiving Water: Big River

B007 Unnamed Tributary
US Survey 3059, T43N, R4E
38º27.114"N 90º35.23.11"W
Receiving Water: Big River

B008 Unnamed Tributary
US Survey 3059, T43N, R4E
38º27'25.506"N 90º35.13.053"W
Receiving Water: Big River

City of Crystal City

The purpose of this submittal is to define the goals Crystal City will achieve to continue the requirements of the NPDES program through the 2013 – 2018 permit cycle. The goals were chosen to address the specific stormwater concerns within the City of Crystal City.

Crystal City is a co-permittee under the NPDES MS4 Phase II Permit Number MO-R040052 that is shared with Jefferson County, and the cities of Pevely, Festus, Byrnes Mill and Herculaneum. This City has participated in the Phase II program since 2003. As a co-permittee, Crystal City will follow the guidance of the Storm Water Management Plan submitted as a part of this application for the 2013-2018 permit cycle.

Crystal City is located on the eastern border of Jefferson County along the Mississippi River. It is bordered on the north by Herculaneum and on the west and south by Festus. Crystal City and its neighbor, Festus, are often known as the "Twin Cities". In 2010 the population of Crystal City was 4,855—an increase of 8% over the last 10 years. Crystal City is a third-class city organized in 1803 and is governed by a mayor and eight council members.

The total area of Crystal City is 4.57 square miles of which 4.56 is land and 0.01 is water. There are approximately 1,894 households in the City.

The goals for all six MCMs follow. The progress made toward the goals will be reported in each annual report. Forms L and M for Crystal City are included. The list of nine outfalls and a city map showing the location of those outfalls can also be found in this section.

MCM 1.: Public Education and Outreach

	BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
	Participate in a community event each year	All Years	# of visitors and # of newsletters	Building
	Participate in Twin City event	All Years	# of visitors	Building
	Use building permits development guide	All Years	# sheets distributed	Building
	Develop illicit discharge fact sheets, distribute	Year 2 - 5	# sheets distributed	Building
	Use web page to distribute information to citizens	Year 2 – 5	# of visitors	Building
	Write article in newsletter about how stormwater effects surrounding streams	Year 4 - 5	# newsletters distributed	Building
	Put informational brochures in library	Years 2 – 5	# distributed	Building

MCM 2: **Public Involvement and Participation**			
BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
Encourage citizens to participate in proper yard waste disposal methods	All years	# of warnings & summons	Building
Subdivisions participate in water quality monitoring	Year 2 - 5	# of participants	Building
Monitor clean stream progress in city	Year 3 - 5	# of participants	Building
Develop subdivision managed program for pollution control	Year 4	# of participants	Building
Improve stormwater involvement at individual levels	Year 5	# of participants	Building

MCM 3: **Illicit Discharge Detection and Elimination**			
BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
Inspect all outfalls	All years	# outfalls inspected	Building
Adopt and implement a stormwater ordinance	Year 1	Ordinance adopted	Building
Create plan and map all stormwater pipes, detention areas going to streams	Year 2	Map in progress	Building
Purchase water quality testing equipment and train & certify staff to conduct testing	Year 3	# certified and trained	Building
Conduct survey and record inspection results of all outfalls	annually	# recorded	Building
Update and have blueprints on all new & old storm sewers	All years	# updated and located	Building

MCM 4: Construction Site Stormwater Runoff Control			
BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
Review all site plans for stormwater runoff controls	All years	# reviewed	Building
Have ordinance in place and enforcement	Year 1	Ordinance in place	Building
Educate inspectors in proper site inspection of runoff controls	Annually	# educated	Building
Encourage contractors to use post-construction BMPs to control runoff.	All years	# post construction BMPs implemented	Building
Provide an inspection checklist with building permit	All years	# receiving checklists	Building

MCM 5: Post Construction Stormwater Management			
BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
Have an ordinance and enforcement in place	Year 1	Ordinance in place	Building
Review proposed subdivision plans for stormwater runoff BMPs	All Years	# reviewed	Building
Inspect structural and non-structural stormwater BMPs in subdivisions for operation & maintenance	All years	# inspected	Building
Hold training for site inspectors on proper operation and maintenance of BMPs	Annually	# trained	Building

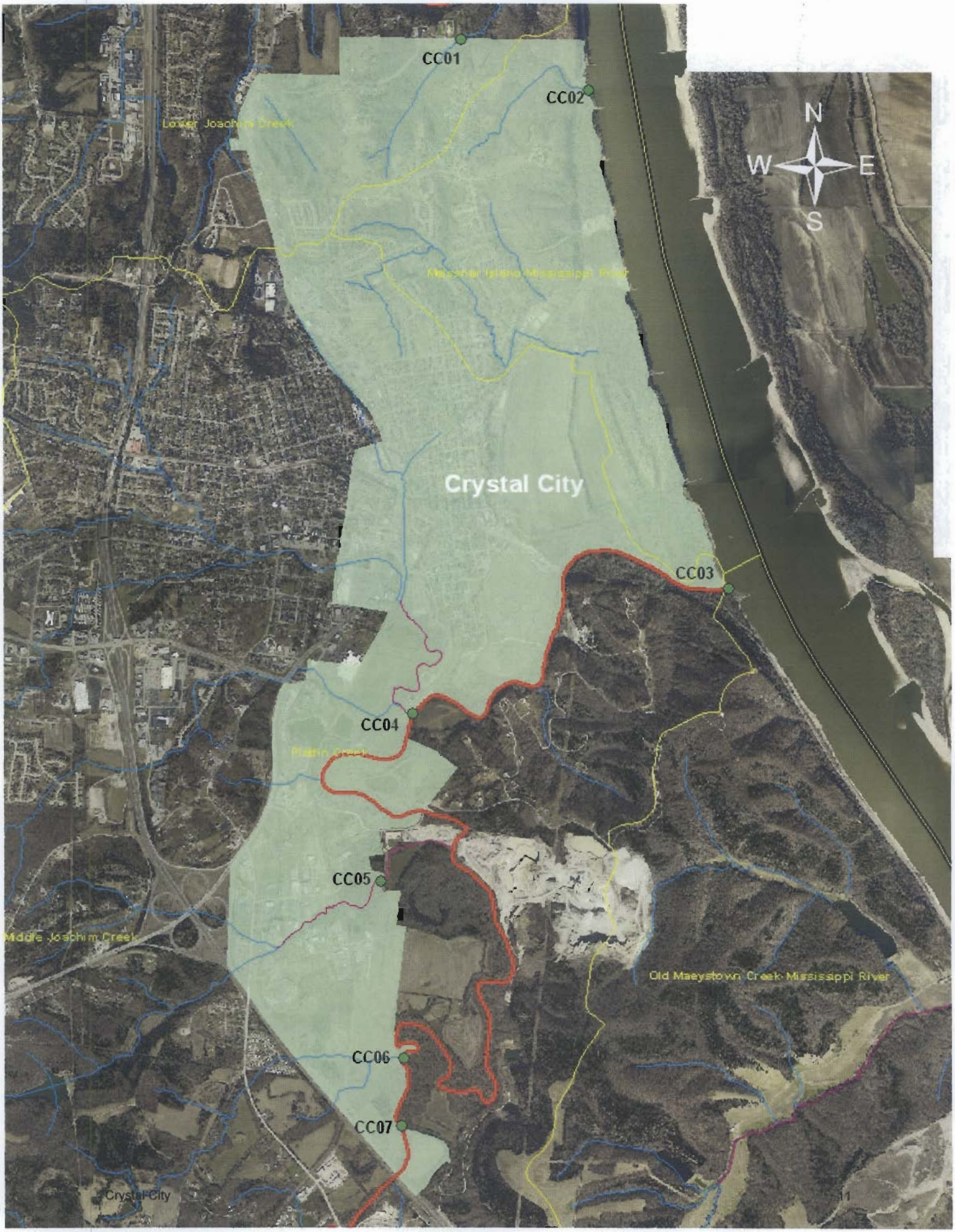
MCM 6: Pollution Prevention/Good Housekeeping for Municipal Operations				
	BMP Goal Selected	Permit Year Completed	Measurement Method	Responsibility
	Clean city streets with street sweeper	All years	Amount of debris collected and disposed	Building
	Pick up leaves with leaf machine	All years	Amount of leaves collected	Building
	Establish ordinances for illegal dumping, pet waste and hazardous materials storage	Year 1 & 2	Ordinances established	Building
	Train staff on good housekeeping techniques	All years	# trained	Building
	Establish procedures for handling of hazardous materials, storage and disposal.	Year 1	Procedures complete	Building

Implementation Schedule

The following Implementation Schedule contains a summary of best management practices and estimated completion period. Most of the BMPs and tasks are scheduled as either annual events or ongoing activities. This schedule is subject to modification as the program proceeds and evolves throughout the permit term.

BMP Implementation Summary - Crystal City	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Public Education and Outreach						
Participate in a community event each year		x	x	x	x	x
Participate in Twin city event		x	x	x	x	x
Use building permits development guide		x	x	x	x	x
Develop illicit discharge fact sheets, distribute			x	x	x	x
use web page to distribute information to citizens			x	x	x	x
Write article in newsletter about how stormwater effects streams					x	x
Put informational brochures in library			x	x	x	x
Public Involvement and Participation						
Encourage citizens to participate in proper yard waste disiposal methods		x	x	x	x	x
Subdivisions participate in water quality monitoring			x	x	x	x
Monitor clean stream progress in city				x	x	x
Develop subdivision managed program for pollution control					x	
Improve stormwater involvement at individual levels						x
Illicit Discharge Detection and Elimination						
Inspect all outlets from Crystal City		x	x	x	x	x
Adopt and implement a stormwater ordinance		x				
Create plan and map all stormwater pipes, detention areas going to streams			x			
Purchase water quality testing equipment and train & certify staff to conduct testing				x		
Conduct survey and record inspection results of all outfalls		x	x	x	x	x
Update and have blueprints on all new and old storm sewers		x	x	x	x	x
Construction Site Storm Water Runoff Control						
Review all site plans for stormwater runoff controls		x	x	x	x	x
Have ordinance and enforcement in place		x				
Educate inspectors in proper site inspection of runoff controls		x	x	x	x	x
Encourage contractors to use post-construction BMPs to control runoff		x	x	x	x	x
Provide an inspection checklist with building permit		x	x	x	x	x

	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Post-Construction Storm Water Management						
Have ordinance and enforcement in place		x				
Review proposed subdivision plans for stormwater runoff BMPs		x	x	x	x	x
Inspect structural and non-structural stormwater BMPs in subdivisions		x	x	x	x	x
Hold training for site inspectors on proper O& M of BMPs		x	x	x	x	x
Pollution Prevention and Good Housekeeping- Public Works						
Clean city streets with street sweeper		x	x	x	x	x
Pick up leaves with leaf machine		x	x	x	x	x
Establish ordinances for illegal dumping, pet waste and hazardous materials storage		x	x			
Train staff on good housekeeping techniques		x	x	x	x	x
Establish procedures for handling of hazardous materials, storage and disposal		x				
Legend. ● = Complete						


CC01
CC02
CC03
CC04
CC05
CC06
CC07
N
W
E
S
Crystal City
Lower Joachim Creek
Middle Joachim Creek
Old Maeystown Creek-Mississippi River
Crystal City

Crystal City
NPDES Outfalls

Outlet #CC01

Unnamed tributary to Joachim Creek
NW ¼ Sec. 32, T41N, R6E
Lat: 38°14'51.572"N Long: 90°23'52.702"W
Receiving Water: Joachim Creek

Outlet #CC02

Unnamed tributary to Mississippi River
FRL ½ Sec. 33, T41N, R6E
Lat: 38°14'46.497"N Long: 90°22'10.532"W
Receiving Water: Mississippi River

Outlet #CC03

Plattin Creek
NE ¼ Sec. 39, T40N, R6E
Lat: 38°12'59.511"N Long: 90°21'32.895"W
Receiving Water: Mississippi River

Outlet #CC04

Unnamed tributary to Plattin Creek
SW ¼ Sec. 8, T40N, R6E
Lat: 38°12'32.746"N Long: 90°22'59.312"W
Receiving Water: Plattin Creek

Outlet #CC05

Unnamed tributary to Plattin Creek
SUR 1906, T40N, R6E
Lat: 38°11'56.942"N Long: 90°23'8.193"W
Receiving Water: Plattin Creek

Outlet #CC06

Unnamed tributary to Plattin Creek
SUR 1916, T40N, R6E
Lat: 38°11'18.635"N Long: 90°23'1.951"W
Receiving Water: Plattin Creek

Outlet #CC07

Plattin Creek
SUR 1915, T40N, R6E
Lat: 38°11'4.211"N Long: 90°23'3.234"W
Receiving Water: Mississippi River

City of Festus

The purpose of this report is to establish the goals Festus will achieve to continue the requirements of the NPDES MS4s Phase II through the 2013-2018 permit term. The goals were chosen to address the specific water quality needs within the City of Festus.

Festus is a co-permittee under the Permit Number MO-R040052 that is shared with Jefferson County, and the cities of Pevely, Crystal City, Byrnes Mill and Herculaneum. This City has participated in the Phase II program since 2003. As a co-permittee, Festus will follow the guidance of the Storm Water Management Plan submitted as a part of this application for the 2013 – 2018 permit term.

Festus incorporated in 1887 is located on the eastern border of Jefferson County. Crystal City separates Festus from the Mississippi River. Since their history is so intertwined, Festus and Crystal City are collectively known as the "Twin Cities". In 2010 the population of Festus was 11,602. Festus is governed by a mayor and city council.

The total area of Festus is 5.71 square miles of which 5.71 is land and 0 square miles is water. Festus does have some unnamed tributaries to Plattin Creek and Joachim Creek running through the community. A levee protects a largely commercial district of Festus and Crystal City from backwater from the Mississippi River. There are approximately 4,646 households in the city.

The goals for all six MCMs follow. The progress made toward the goals will be reported in each year's annual report. Forms L and M are also included. A GIS map of Festus shows the location of nine outfalls. A list of the location of those outfalls can be found at the end of this section.

MCM Implementation Information - Festus

Continued education of stormwater related impacts on the community as a whole, remains the primary purpose of this section. We believe education can be effectively accomplished with digital and printed information.

Public Education & Outreach			
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continued articles in monthly Festus Focus mailer discussing stormwater issues and solutions.	Resident feedback from Festus Focus	Festus
	Maintain stormwater informational link on city website with updated materials, and complaint link.	Numbers of site visits	Festus
	Distribution points at 3 City Buildings for stormwater related brochures.	Amount Distributed	Festus
	Develop specific handouts for H.O.A. for maintenance of detention basins and other stormwater controls.	Amount Distributed	Festus

The goals of this section are to encourage public participation in clean-up, and policing of the cities waterways, and watersheds as a community goal.

Public Involvement and Participation			
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Advertising city wide fall and spring clean-ups	Turnout at events	Festus, Public
	Attending new Sub. meetings when they are turned over from developers to Trustee Board to answer questions and clarify stormwater detention facility maintenance	Turnout for Sub. New Trustee Meetings	Festus, Public
	Encourage public reports on illicit discharge or stormwater concerns with email or phone calls with link on stormwater webpage	Amount of public response	Festus, Public
	While mapping and walking streams involving public in illicit discharge detection and reporting	Inspections	Festus, Public
2015	Involving Public in Stream Mapping and seasonal checks for illicit discharges and cleaning (stream team)	Inspections	Festus, Public

Detection and immediate correction of illicit discharge being the primary goal of this MCM, will be accomplished by visual inspection, city sewer main inspections, sewer repairs, and community involvement.

Illicit Discharge Detection and Elimination			
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue City program of video and repair of old failing sanitary sewer lines, (Instituform) mapping system is now implemented and now mapping all sanitary, stormwater systems within the city.	Amount of Mapping and Repair	Festus
	Inspection of all city outfalls at least once a year	Inspections	Festus
	Continue to operate 2 waste oil drop off locations to minimize illegal dumping	Amount Collected	Festus
	Walking and inspecting all outfall streams checking for illicit discharge	Inspections	Festus
	Electronically mapping and insp. all sanitary sewers in the city for any infiltration	Inspections	Festus
	Continued insp. of failing lagoons and septic systems and have repaired , or hooked to city sewer system	Inspections	Festus

Continued review and permitting of Land Disturbance activities, along with inspections of new and existing projects, will guide the city towards our goal of controlling all stormwater runoff from construction sites.

Construction Site Stormwater Runoff Control			
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue current Land Disturbance Permit App. on all required Building Permits	# of permits	Festus
	Require submittal and in house review of all SWPPPs for projects over 1 acre	# of permits	Festus
	Continue inspections on all active Land Disturbance/SWPPPs permits to assure proper operation of all BMPs	Inspections	Festus
	Introduce Low-Impact Development to P & Z and City Council to investigate if current sub. ordinance needs to be updated	Poss. ordinance change	Festus
	Yearly Insp. of all Sub. detention Facilities Private and Public.	Inspections	Festus
2015	Adoption of updated stormwater, sediment/erosion control standards	Adoption of ordinance change	Festus

Meetings with new and existing Home Owner Associations, and individual owners, on the proper care, and maintenance of their facilities. Mapping of all new stormwater structures, and devices within the city, will go a long way to getting a complete city inventory.

Post-Construction Storm Water Management			
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue Insp. and mapping of all new stormwater piping and det. ponds	Inspections	Festus
	Insp. all curb inlets and stormwater piping and det.ponds prior to developer turning over to homeowner assoc.	Inspections	Festus
	Continue insp. of stormwater inlets in sub. checking that homeowners do not change inlet volume or direction of stormwater flow, by landscaping of yards	Inspections	Festus
	Investigate poss. ordinance update to hard paving of private parking areas, to alternative materials.	New ordinance	Festus
	Distribute Stormwater literature to all new Sub. HOA before infrastructure is turned over to them	Amount distributed	Festus

Training of employees, is probably the most important aspect of this MCM. Constant monitoring of fuel dispensing, street sweeping, salt storage, and vehicle maintenance facilities are also important aspects of this MCM.

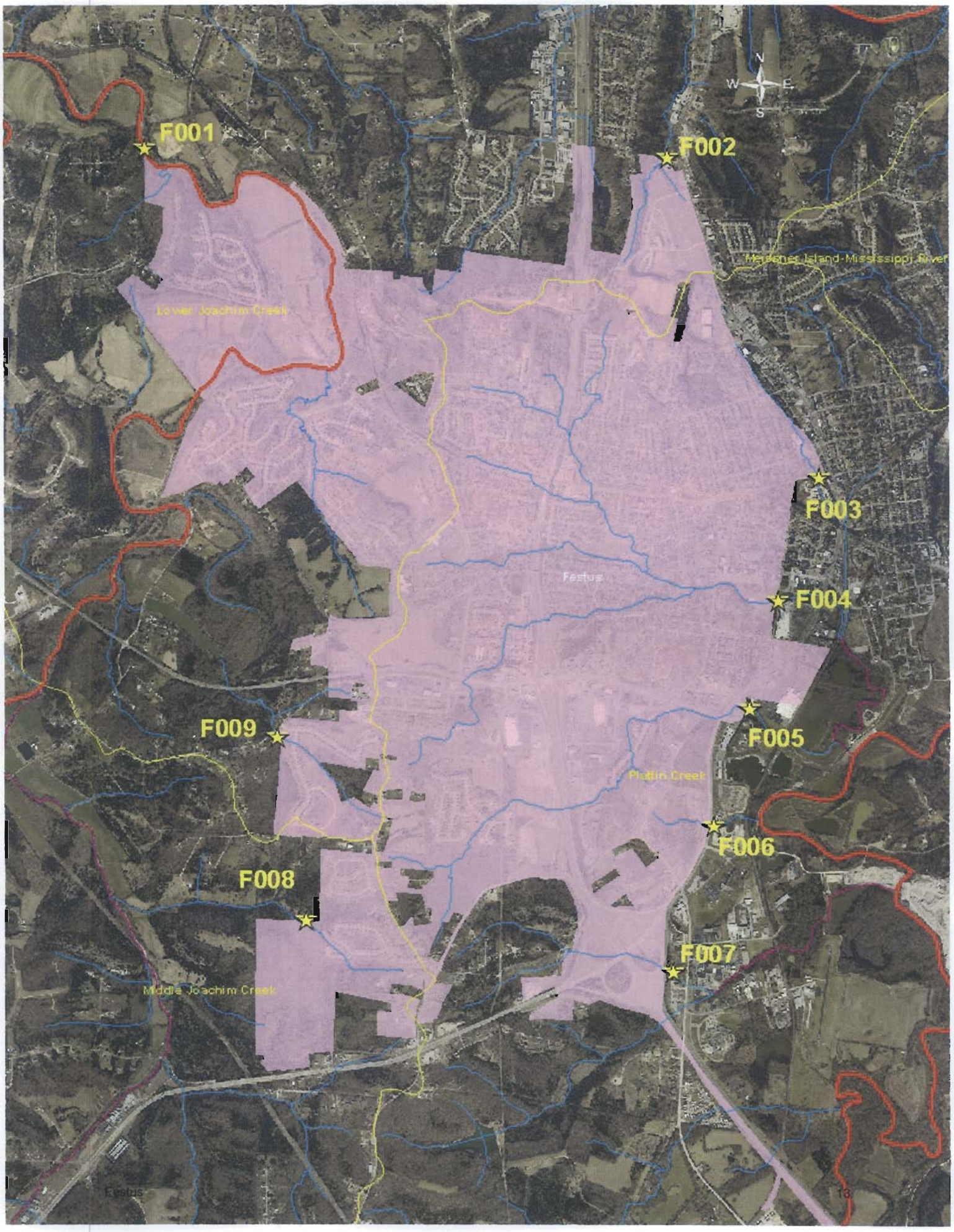
Pollution Prevention/Good Housekeeping For Municipal Operations			
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue City recycle program with trash contractor Educate employees on BMP,s	Amount collected & frequency	Festus
	Add more hours to street sweeping program	Review of streets	Festus
	Review all salt and cinder stocking facilities (new facility)	Creek water testing	Festus
	Maintain all pet waste stations installed in parks	Amount used	Festus
	Install filters at truck wash-down areas	Creek water testing	Festus
	Review all city fueling operations with fuel distributor to make sure BMPs are being followed.	Internal review	Festus
	Review all municipal operations to see if all BMP,s are being followed	Internal review	Festus

Implementation Schedule

The following 5-Year BMP Implementation Schedule contains a summary of BMPs. Most BMPs are scheduled as annual events or ongoing activities. This schedule is subject to modification as the program proceeds and evolves throughout the permit term.

BMP Implementation Summary - Festus	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Public Education and Outreach						
Continue monthly articles in mailer discussing stormwater issues	Festus	x	x	x	x	x
Maintain stormwater informational link on city website	Festus	x	x	x	x	x
Distribute stormwater brochures at three city buildings	Festus	x	x	x	x	x
Develop handouts for HOAs about structural BMP maintenance, repair	Festus	x	x	x	x	x
Public Involvement and Participation						
Advertise city-wide fall and spring clean-ups	Festus	x	x	x	x	x
Attend subdivision meetings at "turnover" to discuss detention maintenance	Festus	x	x	x	x	x
Encourage public reports on illicit discharge and other stormwater concerns with link on city website	Festus	x	x	x	x	x
Involve public in mapping and visual inspection of streams	Festus	x	x	x	x	x
Encourage public involvement in seasonal monitoring and Stream Team	Festus	x	x	x	x	x
Illicit Discharge Detection and Elimination						
Continue video and mapping of sanitary sewer lines	Festus	x	x	x	x	x
Inspect all city outfalls annually	Festus	x	x	x	x	x
Continue to operate two waste oil drop-off locations to avoid illegal dumping	Festus	x	x	x	x	x
Inspect all outfall streams for illicit discharges	Festus	x	x	x	x	x
Electronically map and inspect sanitary sewers for infiltration	Festus	x	x	x	x	x
Inspect failing lagoons and septic systems	Festus	x	x	x	x	x
Construction Site Storm Water Runoff Control						
Continue current Land Disturbance Permit application on all required building permits	Festus	x	x	x	x	x
Require SWPPP and house review on projects disturbing one acre or more	Festus	x	x	x	x	x
Inspect all active land disturbance/SWPPP permits to assure proper operation of BMPs	Festus	x	x	x	x	x
Introduce low impact development to P&Z and City Council to investigate if current ordinance needs to be updated	Festus	x	x	x	x	x
Inspect all subdivision detention facilities private and public	Festus	x	x	x	x	x
Adopt updated stormwater, E/S control standards	Festus			x		

	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Post-Construction Storm Water Management						
Continue inspection of stormwater piping and detention ponds	Festus	x	x	x	x	x
Inspect all curb inlets and stormwater piping and detention ponds prior to developer turning over to homeowner association	Festus	x	x	x	x	x
Continue inspection of stormwater inlets in subdivision checking that hoemowners do not change inlet volume or direction of stormwater flow by changing landscaping	Festus	x	x	x	x	x
Investigate possible ordinance update to hard paving of private parking areas to alternative materials	Festus	x	x	x	x	x
Distribute stormwater literature to new HOAs before infrastucture is turned over to them.	Festus	x	x	x	x	x
Pollution Prevention and Good Housekeeping- Public Works						
Continue city recycle program with trash contractor	Festus	x	x	x	x	x
Educate employees on BMPs for municipal operations	Festus	x	x	x	x	x
Add more hours to street sweeping program	Festus	x	x	x	x	x
Review all salt and cinder stocking facilities and truck clean-out areas	Festus	x	x	x	x	x
Install pet waste stations in parks	Festus	x	x	x	x	x
Install filters at truck wash-down areas	Festus	x	x	x	x	x
Inspect all city fueling operations with fuel distributor to make sure BMPs are being followed	Festus	x	x	x	x	x
Review all municipal operations to see if all BMPs are being followed	Festus	x	x	x	x	x
Legend: ● = Complete						


F001
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F008
F009
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W
E
S
Lower Joachim Creek
Festus
Middle Joachim Creek

City of Festus Outfalls

F001 SW 1/4 NE 1/4 Sec. 35 T41N, R5E
Lat. 38 Deg. 14' 37.512" N
Long. 90 Deg. 26' 5.508" W
Joachim Creek

F002 NE 1/4 NE 1/4 Sec. 31 T31N, R6E
Lat. 38 Dg. 14' 36.019" N
Long. 90 Deg. 23' 48.795" W
Unnamed Tributary to Joachim Creek

F003 NE ¼, Sec. 5, T40N, R6E
90 Deg. 23' 8.858"W
38 Deg. 13' 30.591" W
Unnamed Tributary to Plattin Creek

F004 U.S. Survey 1906 T40N, R6E
90 Deg. 23'19.682"W
38 Deg. 13' 4.579" W
Unnamed Tributary to Plattin Creek

F005 U.S. Survey 1906 T40N R6E
90 Deg. 23' 27.96"W
38 Deg. 12' 42.568"W
Unnamed Tributary to Plattin Creek

F006 SE ¼, Sec. 7, T40N, R6E
90 Deg. 23' 36.876" W
38 Deg. 12' 17.555" W
Unnamed Tributary to Plattin Creek

F007 U.S. Survey 1906 T38N, R6E
90 Deg. 23' 48.336" W
38 Deg. 11' 46.538" W
Unnamed Tributary to Plattin Creek

F008 NE ¼, Sec. 13, T40N, R5E
90 Deg. 25' 24.711" W
38 Deg. 11' 57.622" W
Unnamed Tributary to Joachim Creek

F009 SW ¼, Sec. 12, T40N, R5E
90 Deg. 25' 31.647" W
38 Deg. 12' 36.159" W
Unnamed Tributary to Joachim Creek

City of Herculaneum

The purpose of this section is to define the goals Herculaneum will achieve to continue the progress and performance of the NPDEs program through the 2013 – 2018 permit cycle. The goals were chosen to address the specific stormwater concerns within the Herculaneum community.

Herculaneum is a city located on the east central border of Jefferson County. The population was 3,468 at the 2010 census. The land area of Herculaneum is 4.10 square miles of which 4.06 square miles is land and 0.04 square miles is water.

The city government of Herculaneum includes a Mayor and Board of Aldermen. The Building Official will administer the SWMP under the direction of the City Administrator and Mayor. As a co-permittee under Jefferson County's MS4s NPDEs General Operating Permit Number MO-R040052, Herculaneum will follow the guidance of the Storm Water Management Plan submitted as a part of this application.

Following is the goals set for the 2013 – 2018 permit cycle.

Public Education and Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Place brochures & educational material at City Hall Offices and update website with resource material	Number distributed	City of Herculaneum
2013	Distribute educational materials	Number distributed	City of Herculaneum
2014	Distribute stream clean-up letter to stream-side property owners inviting participation	People Show Up	City of Herculaneum
2015	Write newsletter article "How to Control Water Pollutants and Pool Discharge"	Number of Newsletters	City of Herculaneum
All Yrs	Participate in Task Force at Festivals & Fairs	Amount Distributed	City of Herculaneum
2017	Plant approximately (2) trees with Committees in the City. Involvement teaches residents the benefits of trees including pollutant removal and land stability.	How many on the committees	City of Herculaneum

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Work with volunteers to clean up the City streams & ditches	Numbers of participants	City of Herculaneum
All Yrs.	Encourage participation in the Adopt A Spot Program	How many spots	City of Herculaneum
All Yrs.	Write newsletter article describing recycling and composting techniques	Numbers of Newsletters	City of Herculaneum
All Yrs.	Contact The Stream Team volunteers to monitor Water Quality	Quality Results	City of Herculaneum
All Yrs.	Participate in Arbor Day Celebration with School participation to encourage learning	Numbers of participants	City of Herculaneum
All Yrs.	Ask Tree Board Committee to allow public involvement on maintaining Tree City USA and the importance of trees in landscaping	Numbers of participants	City of Herculaneum

Illicit Discharge

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Identify hazards associated with illegal outfall discharge and cite as violation	Number identified	City of Herculaneum
2013	Visually identify illicit outfalls - Educate homeowners to identify illicit discharge and report violations.	Number identified	City of Herculaneum
2014	Inspect grease interceptors for compliance	Number of inspections	City of Herculaneum
2015	Identify all systems not hooked to City Sewer & work on becoming compliant	Number of inspections	City of Herculaneum
All Yrs	Visually inspect all mapped outfalls	Number inspected	City of Herculaneum
2013	Update Ordinance as needed including enforcement	Upon Adoption	City of Herculaneum

Construction

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All years	Inspect building sites and enforce BMP requirements		City of Herculaneum
All Years	Require site plans include BMPs and post construction BMPs	Number of Permits	City of Herculaneum
All Years	Require SWPPP for development disturbing one acre or more	Inspection of area	City of Herculaneum
All years	Require developers to identify sensitive areas and BMPs to protect them on site plans	SWPP submitted	City of Herculaneum
All years	Perform site inspection at different stages of project development to assure BMPs are in place.	Report of Completion	City of Herculaneum
All years	Require roads be free of mud and debris at all times at construction sites	Number of Cleanings	City of Herculaneum
All years	Perform 2-3 site inspections to assure BMPs are in place during construction	Inspections logged	Herculaneum

Post-Construction

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Educate subdivision trustees on upkeep of BMPs to help pollutant removal and erosion control	Pamphlets	Herculaneum
All Years	Inspect detention areas and take pictures to record changes	Number of Files	Herculaneum
All Years	Encourage LID practices to handle stormwater runoff problems	Number of LID practices implemented	Herculaneum
All Years	Identify structural and non-structural post construction BMPs in pre-construction meeting	Number identified	Herculaneum
2013	Establish a regulatory mechanism to legally record HOA maintenance agreement	Mechanism established	Herculaneum
2013	Update regulatory ordinance and enforcement as needed	Ordinance updated	Herculaneum

Pollution Prevention and Good Housekeeping for Municipal Operations

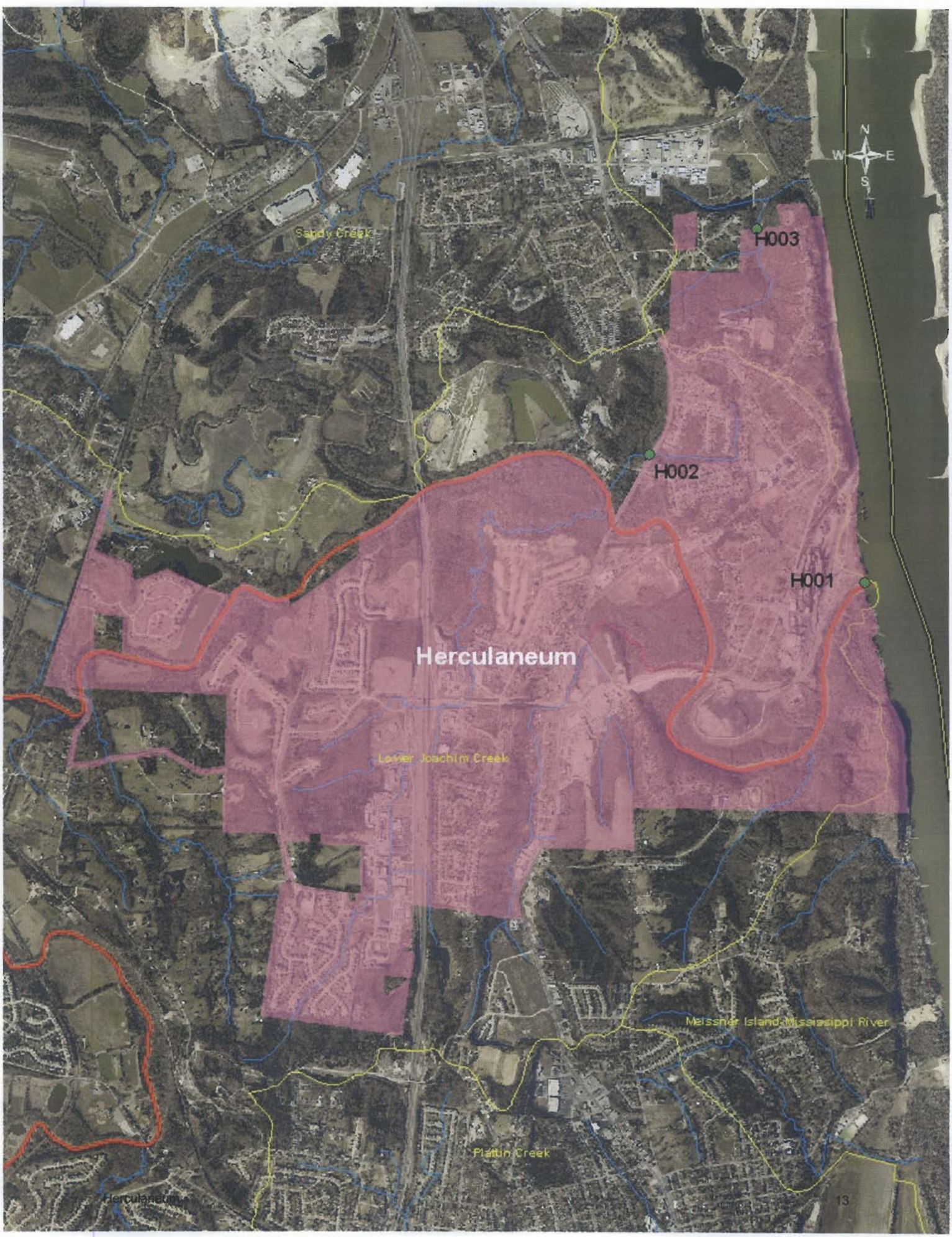
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Continue bulk pick-up on weekly basis	pickups completed	Herculaneum
All years	Clean storm drains quarterly and properly dispose of waste	Number drains cleaned	Herculaneum
All Years	Continue bi-annual clean up work with citizens and work on cleaning debris from the city	Tons collected	Herculaneum
All Yrs	Install pet waste station in parks	bags collected	Herculaneum
All Years	Continue street cleaning daily to eliminate pollutants in storm drains. Dispose of waste appropriately	tons of waste collected	Herculaneum
2014	Write a SWPPP for city municipal operations facility	SWPPP completed	Herculaneum
Every 2 yrs	Train staff in proper handling, mixing and storing of hazardous materials	Percent of staff trained	Herculaneum
All Years	**Practice good housekeeping techniques:** **Vehicle and equipment washing**: Trap oil and sediment before releasing water to storm drain. Use off-site commercial sites for vehicle washing. **Fuels**: Store fuels within a containment area. Train employees in proper fueling and cleanup procedures. **Lubricants:** Store used lubricants within a containment area. Dispose of used lubricants with approved vendor. **Waste:** Use approved waste hauler and landfill for waste disposal. **Spills:** Use absorbent materials on spills as opposed to hosing. **Storage**: Waste materials shall be stored in leak-proof containers. **Tires:** Used tires disposed at aproved tire shredder.	Record tons of waste taken to landfill. Record number of tires taken to shredder. Record amount of oil recycled. Record percent of employees trained in good housekeeping practices.	Herculaneum

Implementation Schedule

The following Implementation Schedule contains a summary of BMPs. Most of the BMPs and tasks are scheduled as either annual events or ongoing activities. This schedule is subject to modification as the program proceeds and evolves throughout the permit term.

BMP Implementation Summary - Herculaneum	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Public Education and Outreach						
Obtain brochures and educational material to distribute at city hall offices and update website with educational materials		x	x	x	x	x
Distribute educational materials		x				
Distribute stream clean-up letter to stream-side property owners inviting participation			x			
Write newsletter article "How to Control Water Pollutants and Pool Drainage"				x		x
Participate in Task Force at Festivals & Fairs		x	x	x	x	x
Plant 2 trees with Committees in the City to teach control of water pollutants and land stability						x
Public Involvement and Participation						
Work with volunteers to clean up the city streams and ditches		x	x	x	x	x
Encourage participation in the Adopt-A-Spot program		x	x	x	x	x
Write newsletter article describing recycling and composting techniques		x	x	x	x	x
Contact Stream Team Volunteers to monitor water quality		x	x	x	x	x
Arbor Day Celebration with school participation to encourage learning		x	x	x	x	x
Ask Tree board Committee to allow public involvement on maintaining Tree City USA and show the benefits of trees in the landscape.				x		
Illicit Discharge Detection and Elimination						
Identify hazards associated with illegal outfall discharge		x	x	x	x	x
Visually identify illegal outfalls and educate homeowners to identify illicit discharge and report violation		x				
Inspect grease interceptors for compliance			x			
Identify all systems not hooked to city sewer and work on having them become compliant				x		
Visually inspect all mapped outfalls		x	x	x	x	x
Update ordinance as needed including enforcement		x				
Construction Site Storm Water Runoff Control						
Inspect building sites and enforce BMP requirements		x	x	x	x	x
Require site plans include BMPs and post construction BMPs		x	x	x	x	x
Require SWPPP for development disturbing one acre or more		x	x	x	x	x
Require developers to identify sensitive areas and BMPs to protect them		x	x	x	x	x
Require roads be cleaned and free of mud and construction debris at all times		x	x	x	x	x
Perform 2 -3 site inspections to assure BMPs are in place		x	x	x	x	x

	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Post-Construction Storm Water Management						
Educate subdivision trustees on upkeep of BMPs to keep pollutants out of streams		x	x	x	x	x
Inspect detention areas & take pictures to record changes		x	x	x	x	x
Encourage LID practices to handle stormwater runoff problems		x	x	x	x	x
Identify structural and non-structural post construction BMPs in pre-construction meeting		x	x	x	x	x
Establish a regulatory mechanism to legally record maintenance agreement		x				
Update regulatory ordinance and enforcement as needed		x				
Pollution Prevention and Good Housekeeping- Public Works						
Continue bulk pick-up on weekly basis		x	x	x	x	x
Clean storm drains quarterly and dispose of waste in landfill		x	x	x	x	x
Continue bi-annual clean up work with citizens and work on cleaning debris from the city		x	x	x	x	x
Install & maintain pet waste station in parks		x	x	x	x	x
Continue street cleaning daily to eliminate pollutants in storm drains. Dispose of waste in appropriate manner		x	x	x	x	x
Write a SWPPP for city municipal operations facility			x			
Train staff in proper technique of handling, mixing and storing hazardous materials		x		x		x
Practice good housekeeping as outlined below:						
Vehicle & Equipment Washing. Trap oil & sediment before releasing water to storm drain		x	x	x	x	x
Store fuels within a containment area, Train employees in proper fueling and cleanup procedures.		x	x	x	x	x
Store used lubricants within a containment area. Dispose of used lubricants with approved vendor		x	x	x	x	x
Train employees in proper fueling and cleanup procedures.		x	x	x	x	x
Use approved waste hauler and landfill for waste disposal.		x	x	x	x	x
Use off-site commercial sites for vehicle washing.		x	x	x	x	x
Dispose of used lubricants with approved vendor.		x	x	x	x	x
Use absorbent materials on spills as opposed to hosing. Waste materials shall be stored in leak-proof containers. Used tires disposed at approved tire shredder.		x	x	x	x	x


N
W
E
S
Sandy Creek
H003
H002
H001
Herculaneum
Lower Joachim Creek
Meissner Island-Mississippi River
Platlin Creek
Herculaneum

City of Herculaneum
Outfalls

H001 Joachim Creek
NE ¼, NE ¼, Sec. 19, T41N, R6E
Lat: 38°15'39.484"N Long: 90°22'18.267"W
Receiving Water: Mississippi River

H002 Unnamed Tributary
SE ¼, SW ¼, Sec. 29, T41N, R6E, Jefferson County
Lat: 38°15'7.703"N Long: 90°35.481"W
Receiving Water: Joachim Creek

H003 Unnamed Tributary
SUR 266, T41N, R6E, Jefferson County
Lat: 38°16'51.433"N Long: 90°22'46.865"W
Receiving Water: Unnamed Tributary to Mississippi River

City of Pevely

The purpose of this submittal is to define the goals Pevely will achieve to continue the progress and performance of the NPDES program through the 2013 – 2018 permit term. The goals were chosen to address the specific stormwater concerns within the Pevely community.

Pevely is 4.69 square miles of which 4.54 square miles is land and 0.15 square miles is water. Pevely is located north of Herculaneum between the San Francisco Railroad and the Mississippi River. Interstate 55 runs through Pevely. According to the U.S. Census Bureau, the population of Pevely in 2010 was 5,484 with 2,128 households.

The city government of Pevely includes a Mayor and Board of Aldermen. The Building Official will administer the SWMP under the direction of the City Administrator. As co-permittee under Jefferson County's MS4s General Operating Permit, Pevely will follow the guidance of the Storm Water Management Plan submitted as a part of this application.

It is necessary to educate the public about ways to protect waterways now for the benefit of future generations. Reading educational materials, practicing pollution prevention practices and using environmentally minded habits are goals set for the residents. The city will utilize its website and make material available to schools to help pass the message about responsible practices that protect water quality.

Pevely does have a Land Use Ordinance that residents, builders and developers are required to follow. These requirements follow the practices outlined by NPDES. As the awareness of pollution prevention practices increases among citizens, practices in dealing with silt, oil, salt, runoff and other pollutants will continue to improve.

Following is the goals set for the 2013-2018 permit term.

CITY OF PEVELY
NPDES PHASE II IMPLEMENTATION SCHEDULE/ GOALS

Public Education & Outreach

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inform public through city newsletter about hazards Continue education information on website about BMP's	Newsletters distributed Site visits	Pevely
2013	Send BMP material to subdivision POA's Distribute BMP material to contractors through building permit process Stencil stormwater inlets to warn about pollution hazard	Publications distributed Inlets stenciled	Pevely
2014	Give educational presentation to HOAs about programs that can be implemented	Participants	Pevely
2015	Review website information, update and include sign up sheet for participation in stormwater activities	Participant apps	Pevely
2016	Develop school flyers/handouts to teach children good stormwater practices	Flyers handed out	Pevely
2017	Complete stenciling project, review website material, review public education and involvement	Total material distributed	Pevely

Public Involvement and Participation

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Participate with Task Force at festivals & fairs Stream clean up include all tributaries in city limits and involve residents along creeks Dedicate agenda item at P&Z meeting for input on BMP's and NPDES	Public Involvement P&Z meetings	Task Force
2013	Invite individual contractors, POA councils, Industry reps to be member of P&Z review of NPDES Assess stream conditions	Participant amount Distance inspected	Pevely
2014	Contact residents along creeks about survey of creeks and invite participation in program to maintain creek banks	Resident participation	Pevely
2015	Invite Pevely Elementary School to participate in clean stream activities at creek adjacent to school.	Student Participation	Pevely
2016	Continue review of streams, creeks for effectiveness	Percentage clean	Pevely
2017	Review public involvement	Percentage of improvement	Pevely

Illicit Discharge Detection and Elimination

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inspect all complaints regarding discharges. Re-inspect for compliance each year. Inspect grease interceptors for compliance Assist EDC Sewer Grant Program locating faulty sewer lateral and obtain grant money	Complaints reported Inspections Grants issued	Pevely Pevely & EDC
2013	Create hazardous waste collections twice a year for residents Adopt Land Use Ordinance similar to Jefferson County and surrounding municipalities Develop stormwater maps displaying source and exit points of discharge Annex neighboring roads to inspect creeks and roadside for stormwater issues and solid waste	Collections performed Ordinance Adoption Map developed Amounts collected	Pevely Pevely & Task Force
2014	Survey along creeks, streams for illegal discharge (sewer, oil, etc.)	Linear feet inspected	Pevely
2015	Check for effectiveness of creek survey for reduction in illicit discharges	Continued violations	Pevely
2016	Review solid waste collections and evaluate if needs to be increased for resident benefit	Collection amount	Pevely
2017	Review for percent of illicit discharge reduction	Percentage reduced	Pevely

Construction Site Storm Water Runoff Control

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Inspect all inlets, detention basins, streets, empty lots on regular basis for BMP compliance	Inspections/ Violations	Pevely
2013	Review adopted stormwater ordinance developed by county and is consistent with neighboring communities	Adoption	Jefferson County & Pevely
2014	Update stormwater map to include new detention basin discharge points	Map update	Pevely
2015	Review ordinance and check for compliance issue problems. Revise ordinance and create education materials to educate violators Review website ordinances for Land Use Section	Violations Review	Pevely Pevely
2016	Review and adopt Low Impact Design Zoning Section for residential development	Adoption	Pevely
2017	Evaluate program with review of complaints reported and citation issuance by code enforcement	Complaints/ Citations	Pevely

Post-Construction Storm Water Management

Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	BMP's installed and inspected Include BMP's on website for homes, subdivisions, …	Inspections Site visits	Pevely Pevely
2013	Include ordinance requirements during subdivision reviews for compliance Distribute information to POA's and invite to P&Z meetings to develop better regulations	Reviews performed Pamphlets distributed	Pevely Pevely
2014	Inspect street inlets prior to storms and inspect detention basins each year for proper weed control compliance and headwall maintenance	Inspections	Pevely
2015	Adopt parking impervious requirements by giving reductions when using pervious hard surface methods	Ordinance adoption	Pevely
2016	Review code enforcement regulations and determine if they meet NPDES standards	Code adoption	Pevely
2017	Evaluate effectiveness of pre-construction design criteria and its use in the review process	Ordinance revisions	Pevely

Pollution Prevention/Good Housekeeping For Municipal Operations

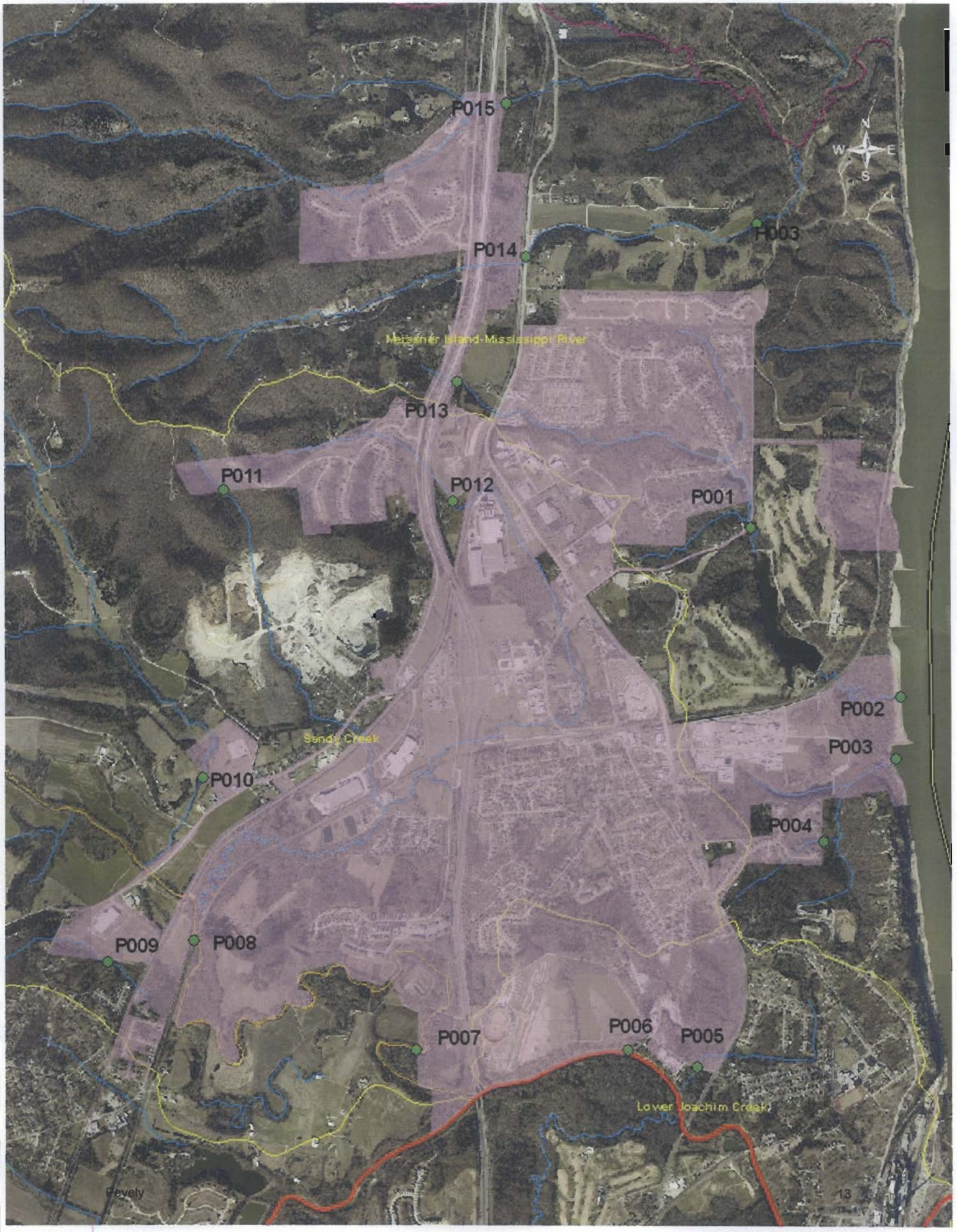
Permit Year	BMP Goal Selected	Measurement Method	Responsibility
All Years	Cleaning of streets after winter event Training employees Inspect for salt/sand leach around storage bins Continue white good/electronic collection twice a year door to door	52 miles of streets Hours of training Inspections Amount collected	Pevely
2013	Construct new holding area for salt/sand piles on hard surface with cover Begin composting site for limbs, brush and turn into mulch	Creek water testing Cubic yards	Pevely
2014	Develop checklist for facilities – BMP's Increase areas of review. Prepare a SWPPP for each Municipal operations site.	Inspections	Pevely
2015	Install 2 pet waste stations in Parks	Installation Baggies used	Pevely
2016	Install additional pet waste stations in remaining parks	Installation Baggies used	Pevely
2017	Install filters for stormwater inlet at Public Works Facility	Creek water testing	Pevely

Implementation Schedule

The following Implementation Schedule contains a summary of BMPs. Most of the BMPs and tasks are scheduled as either annual events or ongoing activities. This schedule is subject to modification as the program proceeds and evolves throughout the permit term.

BMP Implementation Summary - Pevely	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Public Education and Outreach						
Inform public through city newsletter about hazards		x	x	x	x	x
Send BMP material to subdivision POAs		x				
Distribute BMP material to contractors through building permit process		x				
Stencil stormwater inlets to warn about pollution hazard		x				
Give educational presentation to HOAs about programs that can be implemented			x			
Review website information - update as needed				x		
Develop school flyers/handouts to teach students about good BMP habits					x	
Complete stenciling project, update website, review public education involvement						x
Public Involvement and Participation						
Participate with Task force at festivals and fairs		x	x	x	x	x
Stream clean up include all tributaries in city limits and involve residents along creeks		x	x	x	x	x
Dedicate agenda items at P&Z meeting for input on BMPs and NPDES		x	x	x	x	x
Invite individual contractors, POA councils, industry reps to be member of P&Z review of NPDES		x				
Assess stream conditions			x			
Contact residents along creeks about survey of creeks and invite participation in program to maintain creek banks				x		
Invite Pevely Elementary School to participate in clean stream activities					x	
Continue review of streams, creeks for effectiveness						x
Review public involvement						
Illicit Discharge Detection and Elimination						
Inspect all complaints regarding discharges. Reinspect each year		x	x	x	x	x
Inspect grease interceptors for compliance		x	x	x	x	x
Assist EDC Sewer Grant Program locating faulty sewer lateran and obtain grant money		x	x	x	x	x
Create hazardous waste collections twice a year for residents		x				
Adopt Land use Ordinance similar to Jefferson County surrounding communities		x				
Develop stormwater maps displaying source and exit points of discharge		x				
Annex neighboring roads to inspect creeks and roadside for stormwater issues & waste		x				
Survey along creeks, streams for illegal discharge (sewer, oil, etc.)			x			
Check for effectiveness of creek survey for reduction in illicit discharges				x		
Review solid waste collections and evaluate if needs to be increased for resident benefit					x	
Review for percent of illicit discharge reduction						x

	Responsible Dept.	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Construction Site Storm Water Runoff Control						
Inspect all inlets, detention basins, streets, empty lots regularly for BMP compliance		x	x	x	x	x
Adopt stormwater ordinance developed by county and is consistent with neighboring communities		x				
Update stormwater map to include new detention basin discharge points			x			
Review ordinance and check for compliance issue problems				x		
Revise ordinance and create education materials to educate violators				x		
Review website ordinances for Land Use section				x		
Review and adopt LID zoning section for residential develoment					x	
Evaluate program with review of complaints and citation issued by code enforcement						x
Post-Construction Storm Water Management						
BMPs installed and inspected		x	x	x	x	x
Include BMPs on website for homes, subdivisions, etc		x	x	x	x	x
Include ordinance requirements during subdivision reviews for compliance		x				
Inspect detention basins each year for proper weed control & headwall maintenance		x	x	x	x	x
Distribute information to POAs and invite to P&Z meetings to develop better regulations		x				
Inspect street inlets prior to storms			x			
Adopt parking requirements by giving credits when using pervious hard surface methods				x		
Review code enforcement regulations and determine if they meet NPDES standards					x	
Evaluate effectiveness of pre-construction design criteria and its use in the review process						x
Pollution Prevention and Good Housekeeping- Public Works						
Cleaning of streets after winter event		x	x	x	x	x
Training employees		x	x	x	x	x
Inspect for salt/sand leach around storage bins		x	x	x	x	x
Continue white good/electronic collection twice a year door to door		x	x	x	x	x
Construct new holding area for salt/sand piles on hard surface with cover		x				
Begin composting site for limbs, brush and turn into mulch		x				
Develop checklist for facilities- BMPs and increase areas of review			x			
Install 2 pet waste stations in parks				x		
Install additional pet waste stations in remaining parks					x	
Install filters for stormwater inlet at Public Works facility						x


P015
P014
P003
Meissner Island-Mississippi River
P013
P011
P012
P001
P002
Sandy Creek
P003
P010
P004
P009
P008
P007
P006
P005
Lower Joachim Creek
Revely
13

2013 – 2018 Pevely Outfalls

P001 Unnamed Tributary
SW ¼, SW ¼, Sec. 7, T41N, R6E
38º 17' 43.893"N 90º 23' 7.675"W
Receiving Water: Mississippi River

P002 Unnamed Tributary
SUR 266, T41N, R6E, Jefferson County
38º 17' 11.148"N 90º 22' 37.367"W
Receiving Water: Mississippi River

P003 Unnamed Tributary
SUR 266, T41N, R6E Jefferson County
38º 16' 57.855"N 90º 22' 38.123"W
Receiving Water: Mississippi River

P004 Unnamed Tributary
SUR 2977, T41N, R6E, Jefferson County
38º 16' 44.36"N 90º 22' 50.745"W
Rec. Water: Tributary to Mississippi R.

P005 Unnamed Tributary
SUR 2977, T41N, R6E, Jefferson County
38º 16' 2.999"N 90º 23' 19.796"W
Receiving Water: Joachim Creek

P006 Joachim Creek
SUR 2977, T41N, R6E, Jefferson County
38º 16' 6.033"N 90º 23' 36.197"W
Receiving Water: Mississippi River

P007 Sandy Creek
SUR 924, T41N, R5E, Jefferson County
38º 16' 6.505"N 90º 24' 24.867"W
Receiving Water: Joachim Creek

P008 Sandy Creek
SUR 924, T41N, R5E, Jefferson County
38º 16' 25.943"N 90º 25' 15.158"W
Receiving Water: Sandy Creek

P009 Unnamed Tributary
SUR 421, T41N, R5E, Jefferson County
38º 16' 22.076"W 90º 25' 34.85"W
Receiving Water: Sandy Creek

P010 Unnamed Tributary
SUR 421, T41N, R5E Jefferson County
38º 16' 56.121"N 90º 25' 12.937"W
Receiving Water: Sandy Creek

P011 Unnamed Tributary
SUR 822 T41N, R5E, Jefferson County
38º 17' 47.412"N 90º 25' 7.957" W
Receiving Water: Unnamed Tributary to Sandy Creek

P012 Unnamed Tributary
SUR 266 T41N, R6E, Jefferson County
38º 17' 45.227"N 90º 24' 15.441"W
Receiving Water: Sandy Creek

P013 Unnamed Tributary
SUR 822, T41N, R5E, Jefferson County
38º 18' 6.783"N 90º 24' 14.318"W
Receiving Water: Unnamed Tributary to Mississippi River

P014 Unnamed Tributary
NW ¼, Sec. 7, T41N, R6E
38º 18' 29.62"N 90º 23' 58.421"W
Receiving Water: Unnamed Tributary to Mississippi River

P015 Unnamed Tributary
NW ¼, Sec 6, T41N R6E
38º 18' 57.216"N 90º 24' 2.76"W
Receiving Water: Unnamed Tributary to Mississippi River