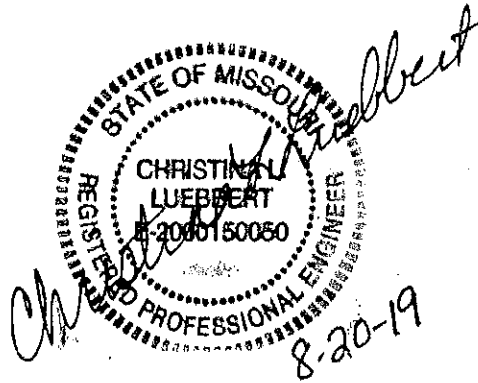


**CITY OF MARSHALL, MO
STORMWATER
MANAGEMENT PLAN**

December 2017 – September 2021



Signed: Christina L. Luebbert, P.E., LEED AP
E-2000150050
Luebbert Engineering
304 Travis Court
Jefferson City, MO 65101
573-291-6567

City of Marshall Background

Information on the Permittee:

Name of the Permittee: City of Marshall, Missouri
Type of Entity: City – Municipality
Total Area: 10.28 sq. miles
Mailing Address: 1277 South Odell Avenue, Marshall, MO 65340
Primary Contact: Bill Anderson, Director of Municipal Services
Phone Number: 660-886-3345
Population (2017 estimated): 12,708

Information on the Municipal Separate Storm Sewer System:

MS4 System Location: Marshall, Missouri
Name of Organization: City of Marshall, Missouri
County Permittee Resides: Saline County
The major receiving waters within the permitted area include: North Fork of Finney Creek and Salt Fork

None of the receiving waters are on the latest CWA's list of impaired waters.

Information on Adjacent Waterways:

The Permittee is within 100 feet of: Streams and lakes
The Permittee is not within 100 feet of waters classified as major reservoirs.
The Permittee has some area defined as wetlands as identified by the National Wetland Inventory.
Stormwater from Marshall does not discharge to a sinkhole.

Introduction

The City of Marshall received its first Municipal Separate Storm Sewer Permit in 2008 (MO R-040062). This permit was renewed in 2008 and again at the end of 2016. This Stormwater Management Plan (SWMP) updates the previous SWMP associated with the 2008 permit.

The Director of Municipal Services is ultimately responsible for implementing the stormwater program. He delegates many of the day to day activities associated with the stormwater program to his staff as necessary. This includes working with a consultant to move priority issues forward. Additional City staff have individual responsibilities related to this program as outlined in the list of municipal operations in Section 4.2.6.1.2. To varying extents, nearly all City employees are a part of the stormwater program implementation. At this time, the City's stormwater program is funded through general revenue funds.

The purpose of this SWMP is to provide information related to the efforts of the City of Marshall to reduce nonpoint source pollution through public education and participation, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control and good housekeeping in municipal operations. It is the City's intent to be compliant with the state and federal requirements set forth under NPDES Phase II to the Maximum Extent Practicable. The section numbers within this plan relate directly to the latest permit requirements provided in the General Permit for Small Municipal Separate Storm Systems dated October 1, 2016.

4.2.1 Public Education and Outreach of Stormwater Impacts

4.2.1.1 Program Goal

The City of Marshall will implement a public education program to distribute educational material to the community and conduct outreach activities about the impact of stormwater discharges on waterbodies and steps the public can take to reduce pollutants in the stormwater runoff.

The Director of Municipal Services will be the person primarily responsible for this program goal. Various duties and activities will be delegated as necessary to other staff and/or volunteers.

The program goal will be evaluated biennially based on the measurable goals listed below. Changes will be made based on the effectiveness of each Best Management Practice.

4.2.1.1.1 Target Audiences

During the initial development of the stormwater education program, Marshall identified the most common sources of urban stormwater pollutants that would be targeted to improve overall water quality. The target audiences were selected because changing their behavior would have a significant stormwater quality impact on the target pollutants. Subsequent reviews confirm the initial identification of pollutant sources. The target audiences for the public education program are:

- Citizens (Homeowners)
- Developers and Home Builders

- Business Owners
- Elected Officials
- City Staff

4.2.1.1.2 Plan to Inform About Steps to Take to Reduce Stormwater Pollution

In order to inform individuals of steps they can take to reduce pollution; the City of Marshall has selected the following Best Management Practices (BMPs) for implementation as part of their Public Education and Outreach program:

- *Household Hazardous Waste program* - The City of Marshall has selected continuing the household hazardous waste collection program for implementation as part of this Storm Water Management Program. This program currently allows for local dropoff of HHW from April to October on the fourth Wednesday of the month. The measurable goal for implementation of this BMP is to advertise and promote this existing program locally through the web site, press releases, brochures, etc. This BMP crosses over to the Public Involvement and Illicit Discharge Elimination minimum control measures (MCMs).
- *Dog Waste Disposal Program* - The City of Marshall has selected using a dog waste disposal program as part of this Storm Water Management Program. Currently, there are multiple dog waste stations with associated educational signage in Marshall's parks system. The measurable goal for implementation of this BMP will be to ensure the dog waste stations are maintained with sufficient bags being supplied and the disposal bins available and emptied regularly. This BMP crosses over to the Public Involvement and Illicit Discharge Elimination MCMs.

4.2.1.1.3 Plan to Inform Individuals and Households About Steps to Become Involved with the SWMP

The City of Marshall includes information on their web site about a variety of ways that citizens can become involved in the SWMP. This includes the posting of the SWMP to the web site and asking for comment, posting of information about how volunteer groups can do storm drain stenciling and requesting the report of pollutants in or around storm drains. Refer to Section 4.2.2 for additional information.

4.2.1.1.4 Outreach Strategies/Mechanisms

Over the years, the City of Marshall has refined their outreach strategies and mechanisms. The City will continue to use the following tools to educate the public about steps they can take to prevent stormwater pollution:

- *Web Site* - The City of Marshall has selected posting information on the City web site as part of their public education and outreach program.

The measurable goal for implementation of this BMP is to continually have a wide variety of stormwater education topics on the web site. As of the date of this SWMP, most of this information can be found here:

<https://www.marshall-mo.com/stormwater>

- Brochures - The City of Marshall has selected utilization of water quality brochures as part of their public education and outreach program. The measurable goal for implementation of this BMP is to continually have a supply of brochures on various topics available at Municipal Services, City Hall, Chamber of Commerce, public library, civic center and the YMCA.
- Public Access Television (Channel 10) - The City of Marshall has selected posting information on the public access television station for implementation as part of this Storm Water Management Program. This will allow messages to get out to a wider variety and potentially larger volume of people. The measurable goal for implementation of this BMP is to post information to the cable channel at least twice a year. Staff may tailor messages to tie into different education and outreach activities.
- Press Releases - The City of Marshall has selected press releases for implementation as part of this Stormwater Management Program. The City will submit press releases to media outlets semi-annually. These press releases (month/year and subject of article) will be tracked and reported biennially.
- Utility Bill Announcements - The City of Marshall has selected inserting information in utility bills for implementation as part of this Stormwater Management Program. This will allow the messages to reach a wider variety and volume of people. The City will include stormwater information with utility bills at least twice each year. Staff will tailor messages to tie into different seasons. The number of times information is included with utility bills will be reported biennially.
- Chamber of Commerce Correspondence - The City of Marshall has selected distributing information through the Chamber of Commerce weekly email updates for implementation as part of this Stormwater Management Program. This will allow the City to distribute to the widest audience possible. Staff will put stormwater education information in the Chamber correspondence regularly. The number of stormwater tips or articles published will be reported biennially.
- Distribute Educational Materials at Community Event - The City of Marshall has selected distributing educational materials at a community event for implementation as part of this Stormwater Management Program. This will allow the City to distribute to the widest audience possible. Staff will distribute stormwater education

materials at least twice per year at community events. Historically, this has occurred at the spring Home Show and the Santa Fe Trail Days in the fall.

The biennial report will indicate at which event(s) staff distributed information, the approximate number of attendees at the event and the type of information distributed.

- Door Hangers - The City of Marshall has selected door hangers for implementation as part of this Stormwater Management Program. This will allow the City to distribute to the widest audience possible. At this time, door hangers are distributed in relation to the storm drain marking program and grass/leaf ordinance enforcement.

At least until all storm drains are stenciled/marked, door hangers will continue to be utilized as part of this program. After this program is completed, the use of door hangers will be reviewed to determine if it is feasible to continue their use in another capacity. The approximate number of door hangers distributed will be reported biennially.

- Maintain Dog Waste Disposal Signage in Parks - The City of Marshall has selected maintaining educational signage regarding dog waste disposal within the Parks system for implementation as part of this Stormwater Management Program. This provides a direct message of desired actions to reduce stormwater pollution. These stations and their associated signage will be regularly inspected to ensure that they have not been vandalized or removed. Additional signs will be added if additional stations are installed.
- Storm Drain Stenciling/Marking - The City of Marshall has selected storm drain stenciling/marking for implementation as part of this Stormwater Management Program. This provides a direct message of desired behavior (i.e. "No Dumping"). The number of storm drains marked or stenciled with the anti-dumping message will be reported biennially.

4.2.1.1.5 Target Pollutant Sources

The following is a list of the leading pollutants, that could be found in the permitted area, that are carried by stormwater runoff into water bodies and will be targeted for reduction in the public education and outreach program:

- Suspended solids
- Oil and grease
- Pesticides/Herbicides
- Bacteria/Nutrients/Oxygen-depleting substances
- Habitat alterations
- Salinity (salt)
- Litter/Trash

These pollutants were selected because they are universally accepted as some of the most common to be found within urban stormwater runoff. Dry weather field screening has not indicated any specific pollutants of concern in the past so therefore, the City chooses to continue a broad education program that targets all of these common pollutants. If enhanced screening in the future indicates that focus should be increased on any particular pollutant source(s), then the education program will be amended as needed.

4.2.2 Public Involvement and Participation

4.2.2.1 Program Goal

The City of Marshall will implement a public involvement/participation program to provide opportunities for the community to be involved with the development and oversight of the SWMP. The City of Marshall will comply with state and local public notice requirements when implementing the public involvement/participation program.

The Director of Municipal Services will be the person primarily responsible for this program goal. Various duties and activities will be delegated as necessary to other staff and/or volunteers.

The program goal will be evaluated biennially based on the measurable goals listed below. Changes will be made based on the effectiveness of each Best Management Practice.

4.2.2.1.1 Public Notice on Renewal Application/SWMP

The public was included in reviewing the revised SWMP. In August 2019, approximately 15 business days prior to the submittal of the SWMP to MDNR, the updated SWMP was made available to the public and information requesting comment posted to the city web site.

4.2.2.1.2 Public Meeting Notice

The SWMP was presented to the City Council on August 19, 2019, for their review at a regular Council meeting which followed the usual public meeting notice requirements.

4.2.2.1.3 Plan to Target Stakeholders

The City of Marshall has developed a plan to target stakeholders. The following BMP's are currently used to invite public involvement and participation in the City's SWMP.

- *Invite public input through existing meetings* - City of Marshall invites public input through existing mechanisms as part of this Storm Water Management Program. This BMP allows public involvement and participation to be integrated into existing activities through open public comment at the City Council meetings and discussion of development and redevelopment issues as they relate to stormwater at the Planning and Zoning hearings. The number of inputs received through these mechanisms will be reported biennially.

- *Invite public input through the Web Site* - The City web site has requests information from the public related to spotting of illicit discharges and construction site runoff control issues. A phone number and email address are provided on the web site to call if these issues need to be reported. The number of inputs received through this mechanism will be reported biennially. At this time, the City's stormwater information web page can be found at:

<https://www.marshall-mo.com/stormwater>

4.2.2.1.4 Stormwater Committee

The City of Marshall has chosen not to have a Stormwater Advisory Committee. If this changes in the future, citizens will have an opportunity to be representatives on the committee.

4.2.2.1.5 Volunteer Monitoring/Cleanup Activities

The City of Marshall provides opportunities for the public to become involved in volunteer monitoring and cleanup activities. The measurable goal for implementation of this BMP is to provide opportunities for volunteers from community groups to participate in activities related to the stormwater program like storm drain stenciling or litter pickups. The City will look for ways that citizen volunteers can educate others in the course of these activities. The approximate number of volunteers, the type of activity completed, and the approximate date of the activities will be reported biennially.

4.2.2.1.6 Volunteer Opportunities to Educate Others

The City of Marshall provides opportunities for volunteers to become involved educating others about stormwater quality. When citizen groups do storm drain marking, they also hang public education door tags in the area to bring attention to the storm drain markers and discuss why illicit discharges are undesirable. On average, four homes are provided information for every storm drain marked. The City will track the number of volunteers that are involved in distributing the door hangers.

4.2.3 Illicit Discharge Detection and Elimination

4.2.3.1 Program Goal

The City of Marshall has developed, implemented, and currently enforces a program to detect and eliminate illicit discharges into their Small MS4.

The Director of Municipal Services will be the person primarily responsible for this program goal. Various duties and activities will be delegated as necessary to other staff and/or volunteers.

The program goal will be evaluated biennially based on the measurable goals listed below. Changes will be made based on the effectiveness of each Best Management Practice.

4.2.3.1.1 Storm Sewer Map

The City of Marshall has developed a storm sewer system map that is a reasonably complete inventory of all publicly owned stormwater pipes and structures. Some of the privately-owned stormwater system is also mapped. This map is GIS-based and integrates additional GIS data such as aerial photography, contour data, etc. City staff collected the field data for this map starting in about 2007. The GIS data is reviewed and updated as new additions to the MS4 are constructed. Additionally, corrections are made whenever a discrepancy is discovered in the field. At this time the Municipal Services Office Manager is primarily responsible for this task with occasional assistance from the Utilities GIS Coordinator.

Outfalls were identified during a desktop exercise in a previous permit cycle. At the time, it was understood that an outfall was defined as anywhere water left the jurisdictional boundary in a concentrated form with major outfalls being defined as coming from a 36" diameter pipe or larger. Sixteen outfall locations were identified based on this definition and prioritized based on the land use in the area upstream of the outfall.

Due to a revision in the interpretation of the definition of an outfall for the MS4, the outfall locations will be revised, and a complete inventory of the outfalls will be created within the GIS. This map will include all of the publicly owned pipe outlets to waters of the United States within the jurisdictional area. This will be completed in the second calendar year of the permit cycle (2020) and the revised outfall map will be added at a link noted below to where the outfall map can be viewed online.

The outfall map can be viewed at the following link:

(Write in link above when task completed)

4.2.3.1.2 IDDE Ordinances

The City of Marshall passed the stormwater ordinances on December 1, 2008. Chapter 33, Article III of the City Code relates to this minimum control measure. Section 33-310 is related to discharge and connection prohibitions. Section 33-320 is related to the requirements related to the notification of spills. Copies of these codes can be found on the City's web site and through this link:

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

4.2.3.1.3 Plan and Implementation Schedule to Detect Illicit Discharges/Connections

The City of Marshall has been pursuing the detection of illicit discharges and connections to the MS4 since their first permit while iteratively improving this program over time. Initially, this included investigation of cross-connection between the sanitary sewers and the MS4 through the utility department's CCTV and smoke testing work. Later this began to include the dry weather field screening of selected outfalls. The City will continue to improve their detection of illicit discharges through the BMPs described in the following sections.

4.2.3.1.4.Dry Weather Field Screening

Dry weather field screening is defined as a visual inspection of the location to determine if illicit discharges exist or have occurred in the recent past. If an illicit discharge is present at the time of inspection, the enforcement response plan will be utilized to investigate the source and remove the discharge. If one is not present, the inspector simply documents the condition of the outfall and makes any notes for follow up actions. If an outfall consistently falls in this latter category, the City may choose to discontinue the inspection of this location.

Based on the reinterpretation of the definition mentioned in Section 4.2.3.1.1, the outfalls greater than 36" in diameter will be inspected during 2019. The remainder of the outfalls will be divided by subwatershed areas and approximately half will be inspected in 2020 and half in 2021. This will result in each outfall being inspected approximately once within the permit period. If an outfall is in an area of illicit discharge concern, the inspection may be repeated more frequently.

A copy of the dry weather field screening form is included as an attachment to the IDDE Enforcement Response Plan located in Appendix A.

4.2.3.1.5 Procedures for Locating Priority Areas

The City of Marshall's procedures for locating priority areas which include higher likelihood of illicit connections (e.g. areas with older sanitary sewer lines) or sampling to locate impacted reaches will be re-evaluated following the revision to the outfall definition discussed above. Outfall inspections will be prioritized by size of contributing drainage area first and then by subwatershed location second.

Also, as a part of the upcoming inspections during this permit period, staff will evaluate the contributing drainage area as having "high", "medium" or "low" risk or likelihood of illicit connections/illicit discharges. This assessment would correlate to the possible need for "more frequent", "same frequency" or "less frequent" inspections. Additionally, any sites where a possible illicit connection or discharge is found will automatically be placed in the "high priority" category. As mentioned in Section 4.2.3.1.4 above, outfalls consistently found with no indication of illicit connection or discharge will be placed in the "low priority" category.

The types of land use within the contributing drainage area may also dictate the prioritization. For example, a drainage area where an automotive repair shop is located might be placed in the "high priority" category.

4.2.3.1.6 Procedures for Tracing the Source of Illicit Discharges/Connections

The City of Marshall developed written procedures and techniques for detecting the sources of illicit discharges. These can be described in two broad categories: transient discharges and recurring discharges. Transient discharges may be discovered through complaints or by city employees performing other routine duties. Recurring discharges may be located through dry weather field screening, complaints from neighbors or through discovery by city employees performing other routine duties. Additionally, The City of Marshall will continue to investigate cross-connection of the sanitary and storm sewer systems through CCTV inspection.

The City of Marshall developed a prioritization for investigation for cross-connections in conjunction with the wastewater program utilizing all the resources available for inspection.

Regardless of the method of discovery, the investigation will move forward by tracing the discharge to its point of origin utilizing the GIS map of the stormwater conveyance system. Once the investigator establishes the point of origin, he/she will need to determine if the discharge is an imminent threat to the public's health, safety and welfare. Imminent threats will need to be contained by the appropriate personnel. Depending on the nature of the pollutant, this may be the Hazmat team from the Fire Department or Municipal Services staff. This may include emergency removal of access to the MS4.

Once an emergency response has been handled, the investigator will attempt to determine the responsible party. In some cases, such as dumping, a responsible party may not be determined. Public education in the area may be the only available response to these events. When a responsible party can be determined and the party is willing and able to remediate the problem immediately, the only follow up action required will be a reinspection of the outfall after the cleanup. If the responsible party is not willing or able to remediate the problem immediately, the inspector shall issue a notice of violation outlining the required actions, alternatives and consequences of inaction as set forth in the illicit discharge ordinance.

4.2.3.1.7 Procedure for Eliminating Illicit Discharges/Connections

The City of Marshall developed an IDDE enforcement response plan. This plan further outlines the process of investigating and removing illicit discharges. A copy of the enforcement response plan may be found in Appendix A.

4.2.3.1.8 Plan to Ensure Enforcement of IDDE Ordinances

The City of Marshall developed an IDDE enforcement response plan. This plan further outlines the process of investigating and removing illicit discharges. A copy of the enforcement response plan may be found in Appendix A.

4.2.3.1.9 Plan to Inform About IDDE Hazards

The City of Marshall has developed a public education effort to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. (This BMP also addresses the minimum control measure for public education.)

The City of Marshall acquired public education materials and distributes them to the appropriate target audiences. City employees are given specific instructions on how to report signs of illicit discharge.

Related existing BMPs:

- *Storm drain stenciling program* - The City of Marshall will continue to work with community groups to stencil existing stormwater inlets with "Dump No Waste, Drains to Stream".

The measurable goal will be to report on the number of inlets stenciled biennially.

- Household Hazardous Waste (HHW) Collection Program - The City of Marshall will continue to encourage its citizens to participate in the HHW collection program. This program currently allows for local dropoff from April to October on the fourth Wednesday of the month. The public education program will further advertise options for proper disposal of HHW.

The City of Marshall will document the collection activities and report biennially as applicable and as referenced in Section 4.2.1.1.2.

4.2.3.1.10 Plan to Address Non-Stormwater Flows Authorized Under 1.2.2.2 if Significant

The City of Marshall does not currently see the need to address the following non-stormwater flows into their MS4: landscape irrigation, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, springs, water from crawl space pumps, footing drains, lawn watering, flows from riparian habitats and wetlands, flows from street wash water, and flows from emergency firefighting activities. These flows are not considered significant contributors of pollutants to the MS4.

The City of Marshall does not currently see the need to address incidental non-stormwater flows into their MS4 (such as non-commercial or charity car washes). These flows are not considered significant contributors of pollutants to the MS4.

4.2.4 Construction Site Stormwater Runoff Control

4.2.4.1 Program Goal

The City of Marshall has developed, implemented, and currently enforces a program to reduce pollutants in any stormwater runoff to their Small MS4 from construction activities that result in land disturbance of greater than or equal to one acre and any smaller land disturbances if part of a greater plan or sale that would exceed the one-acre threshold in aggregate.

The Director of Municipal Services will be the person primarily responsible for this program goal with assistance and coordination with the the City Building Inspector and maintenance staff.

The program goal will be evaluated biennially based on the measurable goals listed below. Changes will be made based on the effectiveness of each Best Management Practice.

4.2.4.1.1 Erosion and Sediment Control Ordinance

The City of Marshall passed a stormwater ordinance which included construction site runoff control requirements on December 1, 2008. Chapter 33, Article IV, of the City Code outlines construction site runoff control requirements specifically relate to developments and redevelopments that disturb greater than one acre and further included sites disturbing less, but that were part of a greater plan or sale.

A copy of this code can be found here:

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

At least once during the permit cycle, the ordinance will be reviewed to determine its effectiveness and if any additional changes are needed. The ordinance will also be reviewed if any changes to the Missouri General Permit are made during the term of the MS4 permit.

4.2.4.1.2 Construction Site Waste Control Ordinance

A recent review of the City's stormwater ordinance resulted in the determination that there were no specific requirements related to addressing "...other wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste." The ordinance will be updated in 2020 to include language to for non-sediment pollutant control.

4.2.4.1.3 Procedures for Pre-Construction Site Plan Review

The City of Marshall has selected pre-construction plan review for implementation as part of this Storm Water Management Program.

The measurable goal for implementation of construction plan review is to complete the reviews of new and redevelopment projects disturbing more than one acre in a timely manner ensuring that selected BMPs are appropriate for the site. During the preparation of a recent biennial report, it was discovered that not all applicable construction projects were reviewed to determine if they met the stormwater ordinance requirements for construction site runoff control. The plan review procedure (especially the inter-departmental coordination) will be reviewed in 2019 to ensure all applicable projects are reviewed.

The Municipal Services Director and the Building Inspector will follow established procedures (via checklist) for plan review. A copy of the plan review checklist is included in Appendix B.

4.2.4.1.4 Procedures for Receipt and Consideration of Information from Public

The City includes education on construction site runoff control as a component of their general public education program. (This BMP also addresses the minimum control measure for public education.)

City of Marshall has selected receiving public input for implementation as part of this Storm Water Management Program. This BMP coordinates with MCM #2 and can be integrated into existing activities through receipt of information from the public at the existing Planning and Zoning hearings and City Council meetings. Additional input can be received less formally through the designated phone number.

The measurable goal for implementation of receiving public input on proposed and current construction projects is to log the receipt of this information, respond within 1 business day where applicable and to document any complaint inspection or enforcement actions taken. A summary of the receipt of information from the public will be included in the biennial report.

4.2.4.1.5 Procedures for Inspections and Monitoring of Construction Sites

The City of Marshall has selected construction site inspections for implementation as part of this Storm Water Management Program.

The measurable goal for implementation of construction site inspections is for new and re-development projects disturbing more than one acre to be inspected at least monthly ensuring that selected BMPs are installed and functioning at the site. This is an ongoing program. The number of inspections completed will be documented and reported biennially.

The City inspector follows established procedures (via checklist) for site inspections. The checklist form can be viewed in Appendix C.

4.2.4.1.6 Plan to Ensure Compliance

Section 33-460 of the City Code has enforcement procedures including escalation of enforcement based on the number and types of violations. This code can be viewed at the following link:

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

At least once during the permit cycle, the ordinance will be reviewed to determine their effectiveness and if any additional changes are needed. They will also be reviewed if any changes to the Missouri General Permit are made during the term of the MS4 permit.

4.2.5 Post-Construction Stormwater Management in New Development and Redevelopment

4.2.5.1 Program Goal

The City of Marshall has developed, implemented, and currently enforces a program to address the long-term stormwater runoff new and redevelopment projects that result in land disturbance of greater than or equal to one acre and any smaller land disturbances if part of a greater plan or sale that would exceed the one-acre threshold in aggregate. This program has been designed and is working to prevent/minimize water quality impacts of these projects.

The Director of Municipal Services will be the person primarily responsible for this program goal with assistance and coordination with the Building Inspector and maintenance staff.

The program goal will be evaluated biennially based on the measurable goals listed below. Changes will be made based on the effectiveness of each Best Management Practice.

4.2.5.1.1 Ordinances

The City of Marshall has worked over the years to develop a variety of regulatory mechanisms and design standards that promote responsible development within their jurisdiction that works to protect the public and the environment from the effects of flooding and stormwater pollution. These ordinances are discussed below:

- *Detention/Treatment Requirements*

The City of Marshall a stormwater ordinance on December 1, 2008. Chapter 33, Article II, of the City Code outlines the requirements for design standards related to stormwater management. The section highlights the requirements for on-site detention/retention through the development of a post construction stormwater management plan. More specifically, Section 33-200 requires adherence to the design standards set forth in KC APWA Section 5600.

Section 33-200:

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

KC APWA 5600:

http://kcmetro.apwa.net/Content/Chapters/kcmetro.apwa.net/File/Specifications%20FAPWA%205600_16FEB2011%20minor%20correction%20pg%2067.pdf

However, Section 5600 does not adequately address the treatment of the water quality volume or the requirement to otherwise prevent/minimize water quality impacts to the maximum extent practicable. In 2020, the City will work with their stormwater consultant to update the stormwater ordinance to better address treatment of stormwater runoff from new and redevelopments that result in land disturbance greater than one acre.

- *Stream Buffer Requirements*

The City of Marshall passed a stormwater ordinance on December 1, 2008. Section 33-200(H) of the ordinance highlighted the use of stream buffers as a filtration, infiltration and stabilization Best Management Practice (BMP). The applicable part of the code can be found at the following link:

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

- *Wetland Protection*

The streamside and riparian buffer zone requirements (see above) provide a de facto wetland protection as many wetlands are located near stream corridors. The City cooperates with the Army Corps of Engineers regulation of jurisdictional wetlands.

The site plan requirements set forth in the APWA 5600 plan requirements standards requires the identification of wetlands on any proposed development plans.

Section 5609.7 (must show man-made and natural topographical features which would include wetlands):

http://kcmetro.apwa.net/Content/Chapters/kcmetro.apwa.net/File/Specifications%20FAPWA%205600_16FEB2011%20minor%20correction%20pg%2067.pdf

4.2.5.1.2 Long Term Operation and Maintenance Requirements

The City of Marshall passed a stormwater ordinance on December 1, 2008. Section 33-240 (B) includes specific requirements for owners of BMP's related to ongoing operation and maintenance.

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

There are currently limited privately-owned permanent stormwater BMPs (detention basins owned by Wal-Mart and Missouri Valley College). The City also has multiple basins at the airport. Each of these basins will be inspected annually to ensure the owners are keeping up with maintenance (see Sections 4.2.5.1.4/4.2.5.1.5). The ordinance allows for a lack of maintenance to be declared a nuisance that can be abated by the City if necessary, after following established abatement procedures.

4.2.5.1.3 Strategies to Minimize Water Quality Impacts

The City of Marshall has adopted the KC APWA Section 5600 in order to manage stormwater quantity. Managing peak runoff volumes does provide a limited impact on stormwater quality. However, the City has identified a need to update the stormwater ordinances by December 2020 in order to better address the treatment of the water quality volume through filtration and infiltration practices.

4.2.5.1.4/4.2.5.1.5 Inspection Plan

The City of Marshall currently only has two privately held stormwater detention basins in town and no other types of long term BMPs. The City also owns basins located around the airport property. These basins will be inspected annually using the detention basin inspection form located in Appendix D. Whenever additional permanent BMPs are installed in the City to meet the updated stormwater requirements, additional inspection guidance will be developed or requested from the engineer at time of permitting.

A summary of these inspections will be included in the biennial report.

4.2.6 Pollution Prevention/Good Housekeeping in Municipal Operations

4.2.6.1 Program Goal

The City of Marshall has developed and continues to work to implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

The Director of Municipal Services will be the person primarily responsible for this program goal. Various duties and activities will be delegated as necessary to other staff and/or volunteers.

The program goal will be evaluated biennially based on the measurable goals listed below. Changes will be made based on the effectiveness of each Best Management Practice.

4.2.6.1.1 Employee Training

The City of Marshall requires that each new employee read, review and sign the stormwater information package prepared by Municipal Services (included in Appendix E). Annually,

Municipal Services dedicates one monthly safety meeting to stormwater quality information. Employees are provided with the stormwater trifold with additional general nonpoint source pollution reduction information. Additionally, a brief “stormwater tip” is included in each monthly safety meeting.

The biennial report will contain a summary of training received by City employees each year.

4.2.6.1.2 List of Municipal Operations and Municipal Industrial Facilities

The City has created a list of municipal operations that are relevant to the MS4 program. Per the permit requirement, the City of Marshall is implementing Good Housekeeping practices in all municipal operations that can reasonably be expected to impact water quality. The City of Marshall’s municipal operations as they relate to the MS4 permit and program include the management and maintenance of:

- Parks and Open Space
- Other Municipally-Owned Recreational Facilities
- Roads and Streets
- Municipal Fleet (Vehicles and Equipment)
- Vehicle and Equipment Yards
- Municipal Buildings
- Municipal Parking Lots
- Storm Sewer System
- Salt/Sand Storage Areas
- Solid Waste Collection
- Wastewater Collection and Treatment Systems*
- Drinking Water Treatment and Distribution Systems*
- Electric Production and Distribution Systems*
- Natural Gas Distribution Systems*
- Internet Service Distribution Systems*

* Operations managed by Marshall Municipal Utilities (MMU) which is a municipally owned and operated entity which is quasi-separate from the City of Marshall corporate entity.

Additionally, any construction or land disturbance undertaken by City crews or by contractors to the City would be considered “municipal operations”.

Marshall Municipal Utilities has a wastewater treatment facility that operates under Permit Number #MO-0032883. The permit authorizes the discharge of wastewater effluent and stormwater runoff from this facility. Therefore, the requirements of these permits shall be followed above and beyond anything otherwise addressed within this SWMP.

4.2.6.1.3 Maintenance BMPs, Schedules, and MS4 Inspection Procedures

The City of Marshall will operate and maintain its municipal separate storm sewer system (MS4) in order to reduce pollutants discharged from the MS4 to the maximum extent practicable.

Municipal Services staff will inspect storm sewers and inlets/catch basins as they conduct their other routine duties. They will clean out pipes and structures from debris and any other pollutants discovered during these inspections. Litter removed from the MS4 will be disposed of in dumpsters. Other floatables and grit will be disposed of according to solid waste management standards.

The following metrics related to the operation and maintenance of the MS4 will be collected and reported on biennially:

- Number of catch basins inspected and/or cleaned
- Lineal feet of pipe inspected and/or cleaned
- Personnel hours spent cleaning ditches, etc.

4.2.6.1.4 Controls for Reducing and Eliminating Pollutants

- Streets, Roads, Highways and Parking Lots:

The City of Marshall will operate and maintain its street system and municipally owned parking lots in a manner to reduce pollutants discharged to the MS4 to the maximum extent practicable. Municipal Services staff will perform regular street and parking lot sweeping. Litter will be picked up as staff and volunteer resources are available.

The following metrics related to the operation and maintenance of the MS4 will be collected and reported on biennially:

- Number of hours spent street sweeping
- Number of times parking lots are cleaned
- Number of man hours spent picking up litter, etc.

- Maintenance and Storage Yards/Shops:

The City of Marshall will operate and maintain its municipal maintenance and storage yards in a manner to prevent and/or reduce pollutants discharged from the sites to the MS4 to the maximum extent practicable by following general good housekeeping practices related to outdoor storage. The following facilities are inspected annually for pollution control issues:

- Municipal Services: 1277 S. Odell Avenue
- Municipal Services: 875 W. North Street
- Municipal Utilities: NW corner of Hwy 65/Hwy 20
- Municipal Utilities: NE corner of Eastwood/Grant
- Municipal Utilities: 200 Block N. Benton

- Parks and Recreation: 1538 East Vest Street
- Municipal Golf Course (managed by Parks and Recreation): 1536 E. Watermill Road

Inspections and activities related to the control of pollutants from City-owned maintenance facilities will be reported on biennially.

The City WWTF operates under its own NPDES permit and will follow the inspection requirements set forth in that permit.

4.2.6.1.5 Procedures for Proper Waste Disposal

The City of Marshall has constructed a street sweepings and inlet vacuum debris (which is all done by the sweeper truck) dewatering area at their Benton Street facility. The leachate from this area discharges to the sanitary sewer system. The debris is then stockpiled until it can be disposed of properly. Other waste from the MS4 and other City facilities is managed in solid waste dumpsters following standard good housekeeping practices.

4.2.6.1.6 Procedures for Assessing Impacts of Flood Control Projects

The City of Marshall works to ensure new 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. New flood management projects completed by private developers must follow the APWA Section 5600 design standards. When the stormwater ordinances and design guidance are updated in 2020, additional measures will be required to ensure the water quality volume is effectively treated. The City of Marshall rarely completes new flood management projects. However, in the event that one is scheduled on the capital projects list, the Municipal Services Director will review the plans with the engineer of record to determine if the water quality storm has been addressed.

At this time, there is no enforcement mechanism to require retrofitting of privately-owned detention structures. However, when such a redevelopment occurs, treatment of the water quality storm will be required under the ordinance updated proposed for 2020.

4.2.6.2 Paints, Solvents, Petroleum Products SPCC

The City of Marshall will manage paints, solvents and petroleum products in a manner to prevent and/or reduce pollutants discharged to the MS4 to the maximum extent practicable. This will apply to any area where these products are stored (maintenance shops) or used.

City staff will follow general Good Housekeeping practices in the storage and use of these products. Paint, solvent and petroleum product storage areas will be inspected annually to determine if any additional BMPs are necessary. The results of these inspections will be included in the biennial report.

5.1 Monitoring

The City of Marshall will retain all records of any monitoring information for a period of at least three (3) years from the date of the sample, measurement or analysis. Any monitoring conducted for the purpose of implementation of any part of the SWMP will be conducted in accordance to test procedures approved under 40 CFR Part 136.

5.2 Recordkeeping

The City of Marshall will retain records of all activities requiring recordkeeping by the SWMP, a copy of the NPDES permit, a copy of all ordinances, policies and formal procedures for all six (6) minimum control measures and of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the report or application. The City will retain a copy of the most recent SWMP on their website (accessible to MDNR and the public).

5.3 Reporting

The City of Marshall will submit biennial reports to MDNR containing: information regarding progress toward achieving the statutory goal of reducing the discharge of pollutants to the Maximum Extent Practicable (MEP), the status of compliance with permit conditions, the assessment of the appropriateness of the identified BMPs and corresponding measurable goals for each MCM, and a summary of results of information collected and analyzed during the reporting periods including any monitoring data or quantifiable values per the measurable goals. The report will also include a summary of the stormwater activities the City plans to undertake during the next reporting cycle with an implementation schedule. The report will document any proposed changes to the SWMP including any changes to any identified BMPs or measurable goals that apply to the SWMP.

These biennial reports are due to MDNR by February 28th of odd years based on a reporting period of January 1st of the beginning year to December 31st of the immediate following year. For example, activities completed, and data collected between 1/1/17-12/31/18 was reported by 2/28/19.

APPENDICES

Appendix A – Illicit Discharge Detection and Enforcement Response Plan

Appendix B – Construction Plan Review Checklist

Appendix C – Land Disturbance Inspection Checklist for Construction Sites

Appendix D – Detention Basin Inspection Form

Appendix E – Employee Training Information Package

Appendix A – Illicit Discharge Detection and Enforcement Response Plan

Illicit Discharge Detection and Enforcement Response (Elimination) Plan

Introduction

The purpose of this plan is to provide guidance to the City of Marshall staff responsible for the implementation of the requirements of the small municipal separate storm sewer system (MS4) general permit specifically as these requirements relate to illicit discharge detection and elimination (IDDE). This permit requires the City of Marshall to:

- Maintain a storm sewer system map with all outfalls identified
- Adopt and enforce an ordinance to effectively prohibit non-stormwater discharges to the MS4
- Create a plan to detect and eliminate non-stormwater discharges
- Identify priority areas of their community for IDDE
- Develop procedures for tracing non-stormwater discharges
- Create procedures for removing non-stormwater discharges
- Provide sufficient penalties for effective enforcement
- Inform public employees, businesses and general public about IDDE
- Develop procedures for program evaluation
- Identify exempt discharges, and

The permit also suggests that commercial businesses and industries be inventoried and inspected for their potential for non-stormwater discharges.

For the purposes of this document, the following definitions shall apply:

- Illicit Discharge is any direct or indirect non-stormwater discharge to the storm drain system, except as exempted by the City.
- Illicit Connection is any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-stormwater discharge including sewage, process wastewater, and waste water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted or approved by an authorized enforcement agency or any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.
- Municipal separate storm sewer system (MS4) is inlets, pipes and open channels that convey stormwater runoff that are within the current corporate limits of the City of Marshall.

- Stormwater is water resulting from precipitation which is not absorbed by the soil, evaporated into the atmosphere, or entrapped by ground surface depressions and vegetation, and which flows over the surface.
- Exempt Non-stormwater Discharges are water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), firefighting activities, and any other water source not containing pollutants.

Also exempt are discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety. Additionally, dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test. Also exempt are any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Illicit discharges can have different characteristics based on the frequency of the flow, the type of flow, the mode of entry into the MS4, and the nature of the generating site. Discharges that are continuous are easier to detect, while intermittent discharges are harder to detect. Likewise, transitory discharges are usually in response to a singular event such as a spill or dumping episode and are also difficult to detect with routine screening. Transitory discharges are most likely to be found through public and employee notification.

Dry weather discharges can be composed of one or more possible flow types including sewage, washwater, liquid waste (such as oil and paint), tap water, landscaping irrigation, groundwater and spring water. Water quality testing can distinguish illicit flow types (sewage/septage, washwater and liquid wastes) from cleaner discharges (tap water, landscape irrigation and ground water).

Illicit discharges can be further classified based on how they enter the MS4. The mode of entry can either be direct or indirect. Direct entry means that 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 or by infiltrating through the joints of the pipe.

Many indirect discharges can be identified and prevented using the concept of "generating sites," which are sites where common operations can generate indirect discharges in a community.

Sites can generally be classified based on land use. Examples of the most common types of non-stormwater discharge sources categorized by "generating site" type are:

- Residential: failing on-site sewage treatment systems, oil dumping, irrigation overflows, swimming pool discharges and car washing
- Institutional (ie. Hospitals, schools, large corporate campuses): fleet maintenance, parking lot cleaning, loading/unloading areas, outdoor storage areas, and routine grounds maintenance
- Commercial: outdoor washing, disposal of food wastes, car fueling/repair/washing, parking lot power washing, poor dumpster management, sewage from campgrounds and marinas
- Industrial: disposal of rinse water, process water, wash water and contaminated, non-contact cooling water, spills and leaks, ruptured pipes, leaking tanks
- Municipal: operations that handle solid waste, water, wastewater, street and storm drain maintenance, fleet washing, yard waste disposal, spills, accidents, and dumping

Detection

Detection of illicit discharges and connections within the City of Marshall will be accomplished through three main avenues: notification by the public, notification by employees and discovery through routine dry weather field screening. Each of these methods of detection is further described below.

Discovery Through Public Notification

The City's stormwater management program includes public education efforts within the City. Many city storm inlets and catch basins are marked with "No Dumping" stencils. The City web site has instructions on how to report illicit discharges to the MS4. As the public becomes more informed about illicit discharges, the City expects to receive more notifications.

If a citizen calls the phone number provided on the web site, they will reach the Municipal Services. The person receiving the call will record on an illicit discharge reporting form (Attachment E):

- The time and date of the call
- The name and contact information of the caller unless they choose to be anonymous
- The location and nature of the discharge
- The source of the discharge (if the caller knows)
- Any other pertinent information

If the discharge poses an imminent threat the environment or public safety, this person will notify Emergency Dispatch at 660-886-7411 for contacting the police and fire departments, and Municipal Services Director at 660-886-3945 to deploy containment as soon as possible. The Director or their designee will follow up investigation and enforcement after the incident.

Discovery Through Employee Notification

The City's employees often have the opportunity to find evidence of illicit discharges and connections as they perform their routine duties. All employees should immediately take steps to stop and/or contain any illicit discharge and notify the Municipal Services Director. If the Municipal Services Director cannot be reached, notify the Street Superintendent.

Procedures to follow if illicit discharge is detected:

- When Municipal Services administrative assistant receives a call from City staff, they will record on an illicit discharge reporting form (Attachment E):
 - The time and date of the call
 - The name and contact information of the caller (unless anonymous)
 - The location and nature of the discharge
 - The source of the discharge (if the caller knows)
 - Any other pertinent information
- Trace upstream to locate the source.
 - **Tracing Procedures**
 - *Flowing discharges* – use visual tracing and/or dye testing.
 - *Non-flowing discharges* – inspect storm drain access points for staining/residual evidence and/or use dye testing.
- Take photos.
- Estimate flow/collect samples if instructed to do so.
- Complete IDDE Reporting Form to document observations.
- Document any further action taken.

If the discharge poses an imminent threat to the environment or public safety, the Municipal Services Director will notify Emergency Dispatch at 660-886-7411 for contacting the police and fire departments and will deploy containment as soon as possible. The Municipal Services Director or their designee will also perform follow up investigation and ordinance enforcement after the incident. If the discharge is not of an emergent nature, the Municipal Services Director will document the investigation of the discharge.

Discovery through routine dry weather field screening

The City of Marshall is working to update their outfall mapping based on revised understanding of the outfall definition. Upon completion, they will prioritize the dry weather field screening program in the following permit reporting period to the larger subwatershed areas with outfalls

coming from a 36" stormwater pipe or larger. In the subsequent years, they will work to screen all outfalls.

At each of these locations, visual inspections will be completed utilizing the dry weather field screening form (Attachment A). Photographs will also be taken. The forms and photographs will be stored in hard copy and electronic form in the Municipal Services Director's office. In the event that signs of illicit discharges or connections are found, the inspector will take a sample with field parameters collected as necessary (temperature, pH, color, odor, clarity). The inspector will then proceed with investigation.

Investigation

Legal authority

Article III of Chapter 33 (the stormwater code) addresses the City's legal authority related to Illicit Discharge Detection and Elimination. A copy of this code can be found:

https://docs.wixstatic.com/ugd/a327fd_92fbc380a0ef462494b534e4a47b63e8.pdf

Investigation Procedure

Upon being notified through one of the detection processes above, potential illicit discharges and connections will be investigated by the Municipal Services Director or his designee. The investigator will begin at location reported and trace the discharge through the storm sewer system upstream to its source unless the location is the source (ie. dumping in an inlet). If needed, the investigator will also trace the evidence of the illicit discharge downstream until it is no longer visible to determine the severity of the damage from the discharge. The investigator will utilize the City's GIS map of the storm sewer system to identify the affected portions of the MS4. If necessary, the investigator may utilize closed circuit television inspection equipment (like that used for sanitary sewer inspections) to trace the source of the discharge.

The investigator will fill out an illicit discharge reporting form (Attachment C) and collect photographic evidence. Samples may also be collected.

If the perpetrator of the discharge is obvious (as in illicit connection can be traced to a structure or dumping of construction waste near a construction site), the investigator will refer the violator to the Municipal Services Director to proceed with enforcement actions as necessary. If the perpetrator cannot be determined, the investigator will notify the Municipal Services Director to issue a work order to the Street Foreman to contain and clean up the illicit discharge (particularly in the case of dumping).

Elimination

Legal Authority

The City of Marshall has ordinances to prohibit illicit discharges and connections. Specifically, Section 33-310 describes the prohibition of any discharge to the MS4 or any watercourse of anything other than stormwater. It does exempt the following discharges: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), firefighting activities, and any other water source not containing pollutants.

It also exempts discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety as well as dye testing. The discharge prohibition also does not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Section 33-310(B) also prohibits the construction, use, maintenance or continued existence of illicit connections to the storm drain system which expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

Section 33-320 of the City Code requires the notification of the City as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Municipal Services department within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three (3) years.

Emergencies

An emergency illicit discharge can be defined as one that poses an immediate threat to human health and safety or imminent harm to the environment. Primarily these will be spills or accidents where the release of a liquid that must be contained. Depending on the volume and nature of the spilled liquid, the actions that must be taken by the City of Marshall Fire Department and Municipal Services Department will vary.

The fire department will be responsible for the containment of any hazardous materials. Hazardous materials are defined as are solids, liquids, or gases that can harm people, other living organisms, property, or the environment. This would include dangerous goods include materials that are radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, biohazardous, toxic, pathogenic, or allergenic. Also included are physical conditions such as compressed gases and liquids or hot materials, including all goods containing such materials or chemicals, or may have other characteristics that render them hazardous in specific circumstances.

Spills of less than 55 gallons of materials that are not hazardous to humans can either be contained by Fire Department or Municipal Services personnel. Absorbent booms can be deployed to prevent the discharge of the spilled material to the storm sewer. Spills of larger quantities will be contained by the Fire Department with assistance from the Municipal Services Department.

As soon as the spill or accident has been contained, the Municipal Services Director or their designee will document the circumstances surrounding the event. The Director will then notify the responsible party (if identifiable) of their responsibilities related to the cleanup including any required notification of the Missouri Department of Natural Resources (MDNR).

If the responsible party is not readily identifiable, the Municipal Services Director will make arrangements with a cleanup contractor (Safety Kleen or similar) for a safe cleanup of the illicit discharge. The Municipal Services Director will retain the documentation of cleanup costs in the event a responsible party can be determined at a later date. If required, the Municipal Services Director will also notify the MDNR.

Non-emergencies

Illicit discharges that do not constitute emergencies primarily relate to accidents or spills that have been contained or intermittent discharges that are not currently discharging. Intermittent discharges can usually be traced to their source.

Transitory discharges (ie. dumping) may present difficulties in identifying the responsible party. If the responsible party is not readily identifiable, the Municipal Services Director will make arrangements with a cleanup contractor (Safety Kleen or similar) for a safe cleanup of the illicit discharge. The Municipal Services Director will retain the documentation of cleanup costs in the event a responsible party can be determined at a later date. If required, the Municipal Services Director will also notify the MDNR.

Disconnection from system

Illicit connections are usually found when a continuous discharge is located through tracing up through the system via visual inspection or through the use of Closed-Circuit Television (CCTV) equipment. The connection can usually be traced to its source. Verification of the

source/connection relationship can be further accomplished through dye testing if necessary. The owner of the property from which the discharge is emanating is considered to be the responsible party.

The inspector will document any procedures utilized for tracing the discharge to its source including CCTV footage, photographs and narrative discussion of the tracing process. This information will be submitted to the Municipal Services Director and retained in the event that it is later needed for a court proceeding.

The Municipal Services Director will then notify the responsible party in writing. The letter shall set forth a timeline for the removal of the illicit connection. A copy of a sample notification letter is included in Attachment B.

In the event that the responsible party is unable to comply within the timeframe presented, the Municipal Services Director has the authority to allow for an extension of up to 90 days. If the responsible party refuses to comply, the Municipal Services Director will declare the illicit connection a nuisance and follow the abatement procedure for nuisances set forth in Chapter 17 of the Municipal Code.

Follow-up Procedures

The Municipal Services Director or his designee will biennially review the files related to IDDE to determine that all investigations have been properly closed. This will include ensuring that all documentation from the time of notification through the investigation and including the completion of any connection removal and/or clean-up is assembled. Any open investigations will be reviewed to determine if additional enforcement action is necessary.

Attachments

Attachment A – Dry Weather Field Screening Investigation Form

Attachment B – Sample Notification Letter

Attachment C – Illicit Discharge Reporting Form

DRY WEATHER FIELD SCREENING DATA FORM

City of Marshall, MO

Date: _____ Time: _____

Outfall ID: _____ Land Use: _____

Site Location: _____

Outfall Dimension/Type: _____

Receiving Water: _____

Site Notes: _____

Time Since Last Rainfall (> 72 hours) (< 72 hours)

Amount of Last Rainfall (> 0.1") (< 0.1")

Air Temperature: _____

Investigation Type: (In Response to Complaint) (Routine Screening)

Flow Observed: (YES) (NO) If yes, describe amount related to channel or pipe:

Width of Water Surface: _____

Depth of Water: _____

Approximate Velocity: _____

Visual Observations:

Odor: (None) (Musty) (Sewage) (Rotten Eggs) (Other)

Color: (None) (Green) (Red) (Brown) (Gray) (Other)

Clarity: (Clear) (Cloudy) (Opaque) (Susp. Solids) (Other)

Floatables: (None) (Oil Sheen) (Suds) (Algae)

(Sewage) (Garbage) (Other)

Deposits/Stains: (None) (Sediment) (Oily) (Rust) (Other)

Vegetation: (None) (Normal) (Excessive Growth)

(Inhibited Growth) (Other)

Structural Condition: (Normal) (Cracks) (Corrosion) (Other)

Photos Taken: _____

Chemical Parameters:

Temperature: _____

pH: _____

Conductivity: _____

Detergent: _____

Ammonia: _____

Turbidity: _____

Samples Taken? (Yes) (No)

Comments: _____

Inspection Completed By: _____

---SAMPLE---

NOTICE OF VIOLATION

Month Day, Year

Citizen Name
Citizen Address
City, State Zip

RE: Tax Map # _____

Dear Citizen:

On [Date], [Name of Inspector], [Title of Inspector] responded to a report of a discharge to the storm drain system on property owned by you at [Property Address] in Marshall.

We did confirm the presence of _____ . This is to confirm the conversation I had with you. You are in the process of _____ and we agreed you would have the correction completed by _____. We discussed you will _____

This discharge is in violation of the City of Marshall's Illicit Discharge Ordinance, which is required by the Clean Water Act. Please keep me informed of how the correction is proceeding. Enclosed is a copy of the Ordinance for your review.

If I can be of further assistance please do not hesitate to contact my office. We are open Monday through Friday from 8:00 - 5:00. I can be reached at [phone number].

Sincerely,

[Employee Name]
[Employee Title]

ILLICIT DISCHARGE REPORTING FORM

REPORTING INFORMATION

DATE _____ TIME _____

CALLER/REPORTING PERSON:

NAME: _____

PHONE: _____

BUSINESS: _____

ADDRESS: _____

BRIEF SUMMARY:

NAME OF PERSON TAKING CALL/REPORT: _____

ILLICIT DISCHARGE INFORMATION

WHEN WAS THE DISCHARGE SEEN?

DATE _____ TIME _____

LOCATION (NEAREST INTERSECTION/LANDMARK/DIRECTIONS):

DISCHARGE:

IS THE MATERIAL IN THE STORM DRAIN? YES / NO
IS THE MATERIAL JUST ON THE HIGHWAY? YES / NO
IS THE SUBSTANCE A KNOWN HAZARDOUS MATERIAL? YES / NO
IS THE SUBSTANCE A KNOWN NON-HAZARDOUS MATERIAL? YES / NO
IS THE SUBSTANCE UNKNOWN AND CANNOT BE IDENTIFIED? YES / NO

DESCRIPTION OF SUBSTANCE:

Appendix B – Construction Plan Review Checklist

CITY OF MARSHALL, MO STORMWATER PLAN REVIEW CHECKLIST

PROJECT NAME: _____ JOB NO: _____

ENGINEER: _____ DATE RECEIVED: _____

REVIEWED BY: _____ DATE REVIEWED: _____

YES	NO	N/A	Plans stamped by Missouri Professional Engineer
YES	NO	N/A	Plan showing all impervious area(s) including roads, buildings, parking areas, etc.
YES	NO	N/A	Total impervious area provided, including any changes to impervious area
YES	NO	N/A	Existing and proposed topography (min. 2' contours) and spot elevations as needed
YES	NO	N/A	Building proposed finished floor provided
YES	NO	N/A	Downspout locations shown
YES	NO	N/A	Stream buffer limits shown
YES	NO	N/A	Floodplain limits shown (BFE indicated)
YES	NO	N/A	Floodplain development permit & associated paperwork if required
YES	NO	N/A	401/404 Permits from Army Corps of Engineers if required
YES	NO	N/A	BMP maintenance and inspection requirements described (either on plan or separate document)
YES	NO	N/A	SWPPP and copy of MDNR land disturbance permit
			Hydrology report for stormwater management facilities including:
YES	NO	N/A	Plan/map showing acreage and flows of all on-site and off-site drainage areas
YES	NO	N/A	Basis for determining runoff coefficients/curve numbers and Time of Concentrations
YES	NO	N/A	Inflow/outflow hydrographs pre and post-development for all design storms
YES	NO	N/A	Storage capacity and discharge rates for all detention structures
YES	NO	N/A	Storage facility designed to release runoff at pre-developed discharge rates or less
YES	NO	N/A	Routing of 100-year event through all systems
YES	NO	N/A	Size and location of all detention facilities
YES	NO	N/A	Water surface elevations for all open channels

Hydraulic report for all storm drains including:			
YES	NO	N/A	Drainage area to each inlet
YES	NO	N/A	Runoff coefficients and calculations for weighted coeff.
YES	NO	N/A	Times of concentration
YES	NO	N/A	Rainfall frequency
YES	NO	N/A	Pipe capacity in cfs
YES	NO	N/A	Peak flow in cfs
YES	NO	N/A	Velocity in fps
YES	NO	N/A	Proper energy dissipation at discharge points
YES	NO	N/A	Profiles of storm sewer system incl. all crossings (check separation)
YES	NO	N/A	Gutter spread calculations
YES	NO	N/A	Inverts for all pipes and inlets shown
YES	NO	N/A	Length, grade, size and type of pipes
YES	NO	N/A	Easements dedicated by plat or separate document
YES	NO	N/A	Check minimum cover and typical pipe embedment detail
YES	NO	N/A	Stormwater structure details
YES	NO	N/A	Swale calculations
Erosion and sediment control plan			
YES	NO	N/A	Notes - In place; restoration; inspection/maintenance
YES	NO	N/A	Perimeter controls
YES	NO	N/A	Stabilized construction entrance
YES	NO	N/A	Inlet protection
YES	NO	N/A	Concrete washout area
YES	NO	N/A	Topsoil stockpile area
YES	NO	N/A	Slope protection

Appendix C – Land Disturbance Inspection Checklist for Construction Sites

CITY OF MARSHALL, MO

LAND DISTURBANCE INSPECTION CHECKLIST FOR CONSTRUCTION SITES

Date _____ Building Permit # _____

Project _____ Grading Permit # _____

Contractor _____ Phone # _____

Address of Project _____

Site Observations:

	N/A	Satisfactory	Deficient	Replace
Perimeter Protection (ex: silt fence)	_____	_____	_____	_____
Stock Piles Stabilized	_____	_____	_____	_____
Sediment Control for disturbed areas	_____	_____	_____	_____
Ditch – check dams	_____	_____	_____	_____
Inlet protection	_____	_____	_____	_____
Sediment basins/traps	_____	_____	_____	_____
Erosion at discharge points	_____	_____	_____	_____
Creek degradation	_____	_____	_____	_____
Vegetative cover	_____	_____	_____	_____
Filter strips	_____	_____	_____	_____
Rock entrance ways	_____	_____	_____	_____
Mud/Dirt on Streets	_____	_____	_____	_____
Other Potential Pollutants	_____	_____	_____	_____

List problem areas _____

Remarks _____

Inspectors Signature _____ Date _____

Appendix D – Detention Basin Inspection Form

City of Marshall, MO
Municipal Services Department
Stormwater BMP Basin Annual Inspection Form

Basin Address/Location: _____

Owner Name: _____

Owner Address: _____

Owner Phone #: _____

Owner Email: _____

Basin Type (circle):

Dry Detention Wet Detention Stormwater Wetland Rain Garden/Bioretenion

Inspection Date: _____

Annual Inspection Items

Circle Yes or No for all items below

A. Has debris or trash/litter accumulated? Yes No

Comment: _____

Corrective Measure: _____

B. Has sediment accumulated? Yes No

Comment: _____

Corrective Measure: _____

C. Are noxious weeds present that prevent the desired vegetation from growing properly?

Yes No

Comment: _____

Corrective Measure: _____

D. Is there exposed soil not covered with vegetation, mulch, or other non-erodable material?

Yes No

Comment: _____

Corrective Measure: _____

E. Is soil erosion present along standing or moving surface water? Yes No

Comment: _____

Corrective Measure: _____

F. Is soil erosion present at basin sides, inlet or outlet? Yes No

Comment: _____

Corrective Measure: _____

G. Are holes present from animals or is there undesirable soil loss? Yes No

Comment: _____

Corrective Measure: _____

H. Is algae or stagnant moisture present? Yes No

Comment: _____

Corrective Measure: _____

I. Are unpleasant odors emerging? Yes No

Comment: _____

Corrective Measure: _____

J. Are wet or soggy areas present that prevent desired vegetation from growing? Yes No

Comment: _____

Corrective Measure: _____

K. Is runoff entering or leaving the basin in a manner that prevents proper function of its inflow or outflow systems? Yes No

Comment: _____

Corrective Measure: _____

L. Does flow out of the basin occur in a manner that creates erosion or damage to adjacent property? Yes No

Comment: _____

Corrective Measure: _____

M. Are the basin functions impaired? Yes No

Comment: _____

Corrective Measure: _____

N. Other items and comments: _____

Inspector Signature: _____

Date: _____

Appendix E – Employee Training Information Package

City of Marshall
DEPARTMENT OF MUNICIPAL SERVICES
1277 South Odell
Marshall, MO 65340
660-886-3945

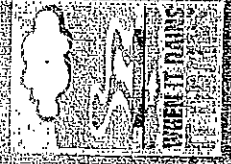
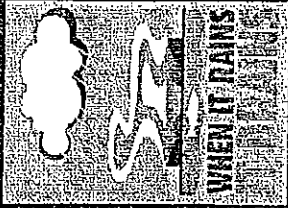
Storm Water Information

1. City of Marshall Employees shall be observant, report and monitor anything that is a concern with storm water.
2. Have received information on storm water.

Signed _____

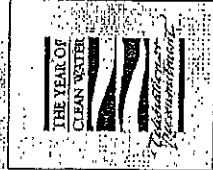
Date _____

After the Storm



For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps



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United States of America

Printed on Recycled Paper with 10% Recycled Content
50% Recycled Paper with 10% Recycled Content
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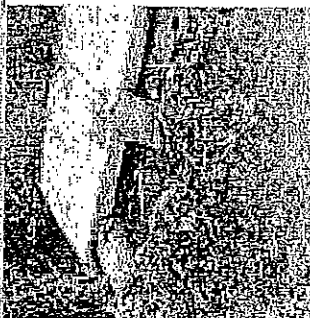
The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- ◆ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ◆ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ◆ Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- ◆ Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ◆ Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- ◆ Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

What is stormwater runoff?



Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.



Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour these into the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

◆ Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.

◆ Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.

◆ Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.

◆ Cover piles of dirt or mulch being used in landscaping projects.



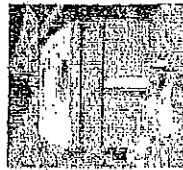
Septic systems

Leaking and poorly maintained septic

systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

◆ Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).

◆ Don't dispose of household hazardous waste in sinks or toilets.

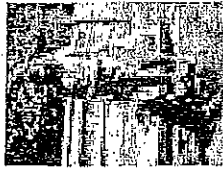


Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

◆ When walking your pet,

remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

◆ Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.

◆ Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.



Education is essential to changing peoples' behavior. Signs and workers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

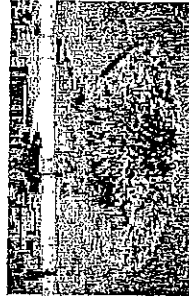
Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted

with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- ◆ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- ◆ Cover grease storage and dumpsters and keep them clean to avoid leaks.
- ◆ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

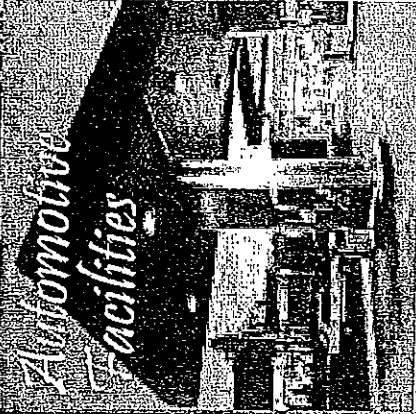
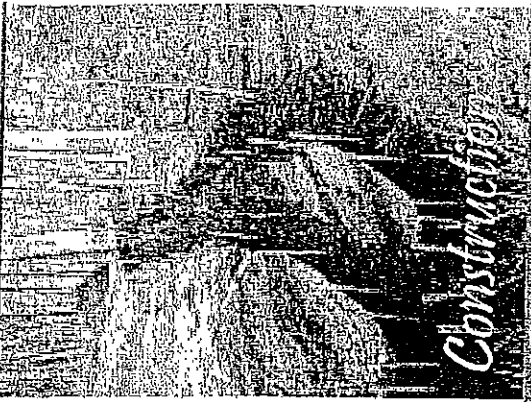
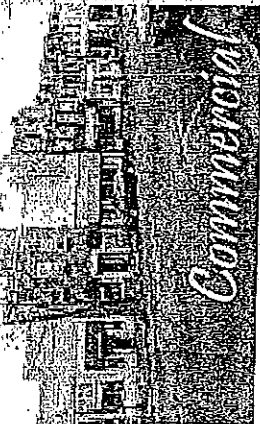
- ◆ Divert stormwater away from disturbed or exposed areas of the construction site.
- ◆ Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls, and properly maintain them, especially after rainstorms.
- ◆ Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- ◆ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ◆ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ◆ Vegetate riparian areas along waterways.
- ◆ Rotate animal grazing to prevent soil erosion in fields.
- ◆ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

Improperly managed logging operations can result in erosion and sedimentation.

- ◆ Conduct preharvest planning to prevent erosion and lower costs.
- ◆ Use logging methods and equipment that minimize soil disturbance.
- ◆ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ◆ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ◆ Expedite revegetation of cleared areas.

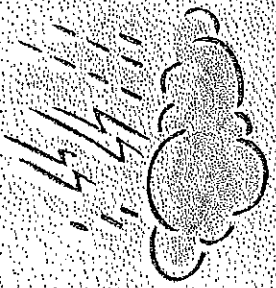


Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- ◆ Clean up spills immediately and properly dispose of cleanup materials.
- ◆ Provide cover over fueling stations and design or retrofit facilities for spill containment.
- ◆ Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- ◆ Install and maintain oil/water separators.



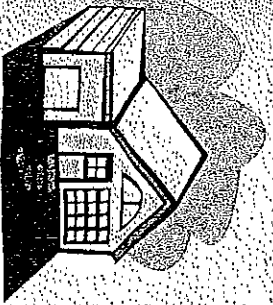
A stormwater flows over driveways, lawns and sidewalks, it picks up debris, chemicals, dirt, and other pollutants.



Stormwater can flow into a stormwater system or directly to a lake, stream, river, wetland, or coastal waterway. Anything that enters a stormwater system is discharged untreated into the waterways for use for swimming, fishing, and providing drinking water. Polluted runoff is our nation's greatest threat to clean water.

By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automobile fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, wetlands, and coastal waters. Remember to practice these habits with your neighbors.

Healthy Household Habits for Clean Water



Lawn and Garden

Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Avoid applications if the forecast calls for rain, otherwise chemicals will be washed into your local stream.

Select native plants and grasses that are drought and pest resistant. Native plants require less water, fertilizer and pesticides.

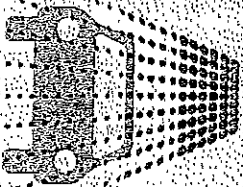
Sweep up yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.

Don't overwater your lawn. Water during the cool times of the day and don't let water run off into the storm drain.

Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local water bodies. Vegetate bare spots in your yard to prevent soil erosion.

Vehicle and Garage

Use a commercial car wash or wash your car on a lawn or other unpaved surface to minimize the amount of dirty, soapy water flowing into the storm drain and eventually into our local waterbodies.



Check your car, boat, motorcycle, and other machinery and equipment for leaks or spills. Make repairs as soon as possible. Clean up spilled fluids with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.

Recycle used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.

Home Repair and Improvement

Before beginning an outdoor project, locate the nearest storm drains and protect them from debris and other materials.



Sweep up and properly dispose of construction debris such as concrete and mortar.

Use hazardous substances like paints, solvents, and cleaners in the smallest amounts possible and follow the directions on the label. Clean up spills immediately, and dispose of the waste safely. Store substances properly to avoid leaks and spills.

Purchase and use nontoxic, biodegradable, recycled and recyclable products whenever possible.

Clean paint brushes in a sink, not outdoors. Filter and reuse paint thinner. When using oil-based paints, properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.

Reduce the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.

Pet Care

When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

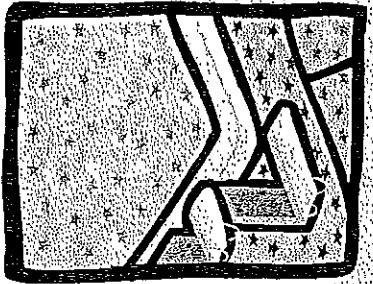


Swimming Pool and Spa

Drain your swimming pool only when a test kit does not detect chlorine levels.

Whenever possible, drain your pool or spa into the sanitary sewer system.

Properly store pool and spa chemicals to prevent leaks and spills, preferably in a covered area to avoid exposure to stormwater.



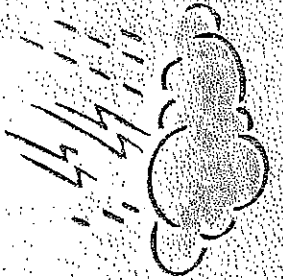
Septic System Use and Maintenance

Have your septic system inspected by a professional at least every 3 years, and have the septic tank pumped as necessary (usually every 3 to 5 years).

Care for the septic system drainfield by not driving or parking vehicles on it. Plant only grass over and near the drainfield to avoid damage from roots.

Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can destroy the biological treatment taking place in the system. Other items, such as diapers, paper towels, and cat litter, can clog the septic system and potentially damage components.

*Storm drains connect
to waterbodies!*



**WHEN IT RAINS
IT DRAINS**

Remember: Only rain down the drain!

For more information visit
www.epa.gov/nhpdcs/stormwater
or
www.epa.gov/nps

Contact Name:

City of Marshall

Contact Organization:

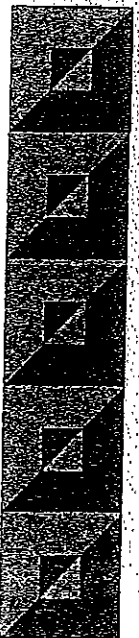
Department of Municipal Services

Contact Address:

1277 S. Odell Ave.
Marshall, MO

Contact Phone:

660-886-3945



Make your home

The

**SOLUTION
TO STORMWATER
POLLUTION!**

*A homeowner's guide
to healthy habits for clean water*

