



**City of Gladstone MS4
Stormwater Management Plan
*2021 - 2026***

MCMs

MCM 1. Public Education and Outreach of Stormwater Impacts

The MS4 Operator shall implement a public education program to distribute educational materials to the community and/or conduct equivalent outreach activities about impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

4.1A-F: The target audiences, target and sources of pollution, and BMP goals of MCM 1 are summarized in Table 1, Table 2, and Table 3 below.

Table 1,2: Target Audiences & BMP Goals

Target Audiences:	Explanation of why audience was chosen:	Target Pollutants:	Sources of Pollution:	Educational BMP(s)	BMP Goals
Residents	Improperly managed yards and pets can lead to the introduction of unwanted chemicals, nutrients and algae blooms in our watersheds and degradation of stream banks.	Fertilizers, chemicals/toxics, yard waste	Poor lawn care, management of yard waste, and proper pet waste	Distribute educational materials at City events and facilities; provide an educational message on water bills.	Educate residents of Gladstone about the negative effects these activities can have on our watersheds.
Contractor	Improperly managed land disturbance sites lead to sediment runoff, chemical/toxics spills, trash/waste/floatables leaving the site.	Sediment/ Suspended Solids, chemicals/toxics, floatables	Contractor and employees	Site management discussion during pre-construction meeting. Monthly (or when required) inspections of land disturbance site BMPs will be performed and any needed corrections made.	Educate construction workers on the importance of proper installation of site BMPs and site management to reduce target pollutants in runoff.
Elementary Schools	Gladstone has 5 elementary schools - children are eager to learn about their environment.	Sediment/ suspended solids, chemicals/ floatables	This program focuses on many different sources	Using a watershed model developed by EnviroScape, City will demonstrate how stormwater runoff carries pollutants and how to mitigate these impacts.	Educate elementary age children.

Table 3: Outreach and Educational BMPs

BMPs:	Measurable goals (The quantity or frequency required to count as a full BMP)	Tracking & Adaptive Management
Information on the City's website	Maintain a webpage throughout the year with up to date information & working links. All links will be checked and the page will be updated as necessary at minimum twice annually.	The number of hits shall be tracked. Gladstone will use this to see which messages get reactions and if certain messages may need more education.
Maintain or mark existing storm inlets with "No Dumping – Drains to Stream" or similar message and require the installation of permanent markings on all new structures.	Placard, stencil, or paint, a minimum of 10% of existing public stormwater inlets in the City per year and permanently mark all new inlets.	Number of inlets, the location of the inlets and how they were marked will be tracked. These areas shall be noted on MCM #3 dry weather screenings and illicit discharge investigations as a method to determine if the markings are effective or if areas could benefit from the markings.
MARC Water Quality Education Committee	Actively participate in water quality education meetings	Track attendance and distribution of committee related materials.
Publish Article in "Coming Home to Gladstone" Magazine	Develop topics that are group specific and address activities and or pollutants of concern at a seasonally appropriate time. A minimum of one article will be published annually.	Track the number of magazines distributed to the public.
MARC Solid Waste Management Committee	Actively participate in the MARC Solid Waste Committee including participation in the Household Hazardous Waste Program	Track the number of meetings attended, events hosted, and the number of participants.
Brochures	Maintain brochures developed in partnership with the MARC Water Quality Education Committee at City facilities including Public Works, City Hall, and the Community Center	The number of brochures that are distributed will be tracked each year along with other activities performed by the Water Quality Education Committee.

Table 4: Involvement BMPs

BMPs	Measureable Goals (The quantity or frequency required to count as a full BMP)	Tracking & Adaptive Management
Regional Yard Waste Recycling Facility	Continue to collect yard waste at the Public Works facility from the Cities of Gladstone, Pleasant Valley, Liberty, Parkville, and Lake Waukomis.	Track the volume of material that is collected and ground for use as mulch.
Cleanup Events	Host a minimum of 2 cleanup events per year including a Spring Beautification Event and Household Hazardous Waste Disposal Event.	Track the amount of material that is collected and the number of vehicles that participate.
Engage the public to mark existing storm inlets with “No Dumping – Drains to Stream” or similar message.		Track the number of inlets, the location of the inlets and how they were marked.
School Presentations	Provide one booth or display (with school approval) at one elementary school within the City limits annually.	Record the number of interactions, the overall attendance, the topic covered, and any educational materials distributed.

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The permittee shall develop and implement a comprehensive public participation program that provides opportunities for public participation in the development and oversight of the permittee's Stormwater Program.

4.2A, B, C: Gladstone will hold a public notice period for thirty (30) days to allow the public to review the draft permit and MS4 Stormwater Management Program prior to submission of the renewal application. As part of the public notice, Gladstone will develop a method to accept and respond to comments. A public meeting will be hosted by the City upon completion of the thirty (30) day notice. The date, time, attendance log, and all related correspondence will be documented and retained.

- Telephone – Normal Business Hours Public Works at 816-436-5442
 After Hours Public Safety at 816-436-3550
- Email – stormwater@gladstone.mo.us
- E-Services via City Website (www.gladstone.mo.us)

4.2.E: The City of Gladstone has an Environmental Management Advisory Committee (EMAC) that meets quarterly. City staff will update the committee at a minimum, annually with the state of, or updates on, the Stormwater Management Program.

4.2.G, H, I: Gladstone shall utilize mechanisms, where appropriate, to track attendance, inquire or concerns, and other information that may be deemed useful to improve the Public Participation Program.

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MCM 3. Illicit Discharge Detection and Elimination

The permittee shall implement and enforce a program to detect and eliminate illicit discharges (as defined in 10 CSR 20-6.200 at 40 CFR 122.26(b)(2)) into the permittee's regulated MS4.

4.3.A, B: The City maintains GIS mapping of the storm sewer system that identifies the system boundaries and the location of outfalls. This data is accessible to all City staff via Integrity, a web-based software solution to access, edit, and analyze GIS data maintained by Midland GIS Solutions. Furthermore, the City retains an extensive file of as-built data.

4.3.C: The City has adopted an Illicit Discharge Detection and Elimination ordinance to effectively prohibit unauthorized non-storm water discharges into the storm sewer system and implement appropriate enforcement procedures and actions. The ordinance can be viewed at the following link:

https://library.municode.com/mo/gladstone/codes/code_of_ordinances?nodeId=COOR_TITVIUTTA_CH120ILDIDEEL

4.3.D-N: The City will conduct outfall field assessments in accordance with the "Illicit Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments." All data will be recorded in the City's in-house Excalibur work order system. Laboratory sampling will be performed by an outside laboratory when necessary. Possible parameters that may be sampled for include but are not limited to: pH, oil and grease, E-coli and fecal coliform, surfactants and fluorescence concentration, specific conductivity, ammonia, chlorine, dissolved oxygen, and fluoride/hardness.

The City has an SOP in place for detecting and addressing unauthorized non-stormwater discharges, including illegal dumping, into the City's MS4.

4.3.O, P: Gladstone will evaluate the current program within this permit and any necessary revisions will be implemented within the first year of the permit cycle. Furthermore, facilities not contained on the stormwater map will be added within the first 2 years of the permit cycle.

4.3.Q,R: The City will develop an in-house plan that will focus on educating City staff who may come in contact with or observe an illicit discharge or illicit connect to the storm system. The target audience will include engineering, code enforcement, streets, stormwater, water, sanitary sewer, fleet maintenance, and parks and recreation. The City will use educational material available from a variety of sources including the Mid-America Regional Council. Each staff member will be required to obtain a minimum of 30-minutes of training annually on MCM 3. The training dates, topics, and attendance will be recorded and the plan will be reviewed annually.

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MCM 4. Construction Site Stormwater Runoff Control

The MS4 Operator shall develop, implement and enforce a program to reduce pollutants in any stormwater runoff to their MS from construction activities that result in land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activities less than one acre shall be included in the program if that construction is part of a larger common plan of development or sale that would disturb one acre or more.

4.4.A: The City of Gladstone has adopted an Erosion and Sediment Control ordinance that requires a permit for all construction activities that disturb greater than or equal to 200 square feet. Furthermore, a Missouri Department of Natural Resources permit is required for construction activities that disturb one-acre or more. Enforcement actions including fines and stop work orders are outlined in the ordinance. The ordinance is linked below:

https://library.municode.com/mo/gladstone/codes/code_of_ordinances?nodeId=COOR_TIT_IXBUCOORBA_CH2200ERSECO_S9.2200.050ERSECOPL

4.4.B: The City of Gladstone will continue to perform a pre-construction plan review of all new development, redevelopment, and capital construction projects and:

1. The site plan review will be consider the following factors:
 - a) Soil erosion potential;
 - b) Site slope;
 - c) Project size and type;
 - d) Sensitivity of receiving waterbodies;
 - e) Proximity to receiving waterbodies; and
 - f) Other factors relevant to the MS4 service area.
2. Use a checklist, or other listed criteria, to ensure consistency and completeness.
3. Include requirements for construction site operators to select, install, implement, and maintain appropriate stormwater control measures.
 - a) This includes temporary BMPs throughout the life of the land disturbance, and permanent BMPs, which remain on site as required by local codes and ordinances.
4. Consider ways to minimize disturbed areas through actions such as, phased construction requirements, temporary seeding or sodding, or erosion mats to exposed areas.
5. Include requirements for construction site operators to control construction-site waste that may cause adverse impacts to water quality including:
 - a) Discarded building materials;
 - b) Concrete truck and mortar mix washout;
 - c) Chemicals (such as fertilizer, paint, oils, herbicides, pesticides);
 - d) Litter; and
 - e) Sanitary waste.

4.4.C: The construction site stormwater program will implement at a minimum:

1. Identify priority sites for inspection based on nature of the construction activity, topography, disturbed area, and the characteristics of soils and sensitivity of, or proximity to, receiving water;
2. Construction site inspections shall be performed weekly and shall include an assessment of compliance with SWPP developed for the project and applicable ordinances;
3. The inspections shall evaluate any structure that functions to prevent pollution of stormwater or to remove pollutants from stormwater and use enforcement policies to require BMPs are implemented and effective;
4. Upon completion of the land disturbance and prior to final approval of the project, ensure all disturbed areas have been stabilized and that all temporary erosion and sediment control measures are removed.
5. The inspections conducted by Gladstone will be documented with a checklist and include a review of self-inspections performed by the site operator.
6. Enforcements actions available to Gladstone include:
 - a) Bonding and/or escrow
 - b) Education
 - c) Written warnings or notice of violation
 - d) Fines
 - e) Stop Work Order

4.4.E: Gladstone will require all construction operators to inspect all BMPs on weekly basis and within 24 hours of rainfall event of 0.5 inches or more.

4.4F: Gladstone will maintain an inventory of public and private land disturbance sites at all times. This inventory shall include the project details including size, location, local contact, and land disturbance priority. Private land disturbance activities will be tracked by the Community Development Department. Public projects will be tracked by the Public Works Department

4.4G: Gladstone will track all oversight inspections including inspector name, date and time, inspection findings, and follow-up actions, if necessary.

4.4H, I: Gladstone will review its stormwater management program including ordinances, permitting procedures, review procedures, inspection procedures and enforcement procedures to ensure compliance with these requirements. Any changes, including development of a project inventory, will be completed within one (1) year of this permit issuance.

4.4J: Gladstone will receive and consider public input regarding land disturbance sites as described in Section 4.2D.

4.4K: The City will develop an in-house plan that will focus on educating City staff who deal with construction site runoff. The target audience will include engineering, code enforcement, streets, stormwater, water, sanitary sewer, fleet maintenance, and parks and recreation. The City will use educational material available from a variety of sources including the Mid-America Regional

Council. Each staff member will be required to obtain a minimum of 30-minutes of training annually on MCM 4. The training dates, topics, and attendance will be recorded and the plan will be reviewed annually.

4.4L: Gladstone will develop written procedures for inspectors to ensure consistency among inspections.

4.4M: Gladstone will review annually the Construction Site Runoff Control Program and make adjustments as necessary.

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MCM 5. Post-Construction Stormwater Management in New Development and Redevelopment

The MS4 Operator shall continue or develop, implement, and enforce a program to address the quality of long-term stormwater runoff from new development and redevelopment projects that disturb equal to and greater than one acre or more including projects less than one acre that are part of a larger common plan of development or sale that would disturb one acre or more and that discharge into the regulated MS4.

4.5.A: Gladstone has adopted the most current version of Section 5600 “Storm Drainage Systems & Facilities” of the Kansas City Metro Chapter of the American Public Works Association (APWA) Standard Specifications, which requires the installation of stormwater BMPs for comprehensive stormwater control. A link to this specification can be found below.

http://kcmetro.apwa.net/Content/Chapters/kcmetro.apwa.net/File/Specifications%2FAPWA%205600_16FEB2011%20minor%20correction%20pg%2067.pdf

4.5B: Gladstone has developed flexible program that allows operators to develop site-specific plans that minimize impacts to water quality and fit the site. The Mid-America Regional Council/APWA BMP Manual is the document utilized by the majority of developers within the community. Structural controls considered by the City include extended detention, bio-swales, rain gardens, stormwater planters, and proprietary BMP items. Non-structural BMPs may include stream buffers, minimal/no-mow zones, tree preservation, buffer zones, and protection of sensitive areas. Furthermore, the City has adopted a regional approach to stormwater management including the construction of five (5) regional detention/BMP basins and the development of a linear trail park/trail system to preserve natural areas.

4.5.C: A pre-construction plan review is conducted by the City on all public and private projects.

4.5.D: Gladstone will utilize existing public nuisance ordinances to address long-term maintenance of post-construction BMP features.

https://library.municode.com/mo/gladstone/codes/code_of_ordinances?nodeId=COOR_TITIXB_UCOORBA_CH1000ABNU_S9.1000.000PUNUPUDE

4.5.E: Gladstone will inspect, or require inspection of, each water quality structural and non-structural post-construction BMP according to the following schedule:

1. A minimum of one (1) inspection will be conducted during construction, and one (1) inspection before the site is finalized, to verify water quality facilities are built as designed and any applicable boundaries or practices for non-structural BMPs are being observed.
 - a) The MS4 inspector shall have access to the approved plans to ensure proper installation.
2. A minimum of once in the first three (3) years after the installation.
3. Annually by the owner or operator of the post-construction BMP and a report submitted to the City of Gladstone.

4. The MS4 Operator shall inspect a minimum of 60% of all water quality post-construction BMPs within the five (5) year permit cycle. This must include installations with ongoing or open enforcement issues.

4.5.F: Gladstone will utilize existing public nuisance ordinances to address long-term maintenance of post-construction BMP features. The enforcement response will consider the following:

1. Degree and duration of the violation;
2. Effect the violation has on the receiving water;
3. Compliance history of the post-construction BMP owner or operator; and
4. Cooperation of the owner or operator with compliance efforts.

4.5.G: Gladstone will begin enforcement action within the timeframe allowed by Missouri statute. Enforcement action may include:

1. Education regarding the BMP and verbal warnings;
2. Written warnings or notice of violation;
3. Fines;
4. Property lien

4.5.H: Gladstone will maintain an inventory tracking the water quality post-construction BMPs. This inventory will include:

1. Relevant contact information for the responsible person(s) or entity (e.g., tracking number, name, address, phone, etc.);
2. The type of post-construction BMP;
3. Applicable operations and maintenance documents;
4. Date that Gladstone approved the construction site plan; and,
5. Record of all maintenance on City-owned facilities.

4.5.I: Gladstone will track post-construction BMP inspections. This may be done by retaining copies of records such as inspection checklists and email correspondence. The MS4 Operator must make these inventories available to the Department upon request.

Gladstone will track at a minimum:

1. Inspection dates/ times;
2. Inspector name(s);
3. Inspection findings; and,
4. Follow up actions including all enforcement actions

4.5.J/K: Gladstone will evaluate its existing ordinance and procedures and changes necessary to comply with this permit will be completed within the first two (2) years of permit issuance.

4.5.L: The City will develop an in-house plan that will focus on educating City staff who deal with post-construction stormwater management. The target audience will include engineering, code enforcement, streets, stormwater, water, sanitary sewer, fleet maintenance, and parks and recreation. The City will use educational material available from a variety of sources including the Mid-America Regional Council. Each staff member will be required to obtain a minimum of 30-minutes of training annually on MCM 5. The training dates, topics, and attendance will be recorded and the plan will be reviewed annually.

4.5.M: Gladstone will review the post-construction stormwater management program annually to evaluate the effectiveness of the program.

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MCM 6. Pollution Prevention/Good Housekeeping for Municipal Operations

The permittee shall develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

4.6.A-C: The City has an in-house plan that focuses on educating City staff who deal with municipal operations. The target audience will include engineering, code enforcement, streets, stormwater, water, sanitary sewer, fleet maintenance, and parks and recreation. The City will use educational material available from a variety of sources including the Mid-America Regional Council. Each staff member will be required to obtain a minimum of 30-minutes of training annually on MCM 6. The training dates, topics, and attendance will be recorded and the plan will be reviewed annually.

4.6.D-I: The City has developed an SOP to address MCM 6.

4.6.J: The City of Gladstone will 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 contain BMPs to address the treatment of the water quality storm. The City of Gladstone rarely completes new flood management projects. However, in the event that one is scheduled on the capital projects list, the City Engineer will review the plans to determine if the water quality storm has been effectively treated. Any information related to new or retrofitted flood management projects will be included in the biennial report.

4.6.K, L: Gladstone will evaluate its existing procedures and procedures and changes necessary to comply with this permit will be completed within one (1) year of this permit issuance.

4.6.M: Gladstone will review its Municipal Operations Program annually to evaluate the effectiveness of the program.

APPENDICES

Appendix A

Standard Operating Procedure: Illicit Discharge Detection and Elimination

Responsible staff: City Staff
Contractor

Equipment: 'Vactor' combination truck (jet and vacuum), camera truck, vac trailer

Material:

Procedure:

1. Illicit Discharge Detection, Tracing, Reporting and Elimination
2. Residents can call the Public Works building to report an Illicit Discharge during standard hours of operation Monday through Friday from 8am to 5 pm. After hours calls are received by police dispatch who then calls the Public Works on call crew leader to report the discharge. A work Order is generated in our Excalibur work order system with all the details reported to dispatch.
 - a) The On call Crew or City field crews promptly investigates reported incidents of discharge.
 - b) If an illicit discharge of unknown source is confirmed, follow the procedure of SOP IDDE - Tracing Illicit Discharges.
 - c) If an illicit discharge known source is confirmed, follow the procedure of SOP IDDE - Removing Illicit Discharges.

IDDE - Removing Illicit Discharges

1. Process

- a. Determine who is financially responsible; and follow associated procedures as given below.

For Private Property

Owner: Contact

Owner,

Issue Notice of Violation for violations of the municipal ordinance,
and Determine schedule for removal.

For Municipal Facility:

Notify appropriate municipal authority or department

head, Schedule removal, and

Remove illicit connection.

- b. Suspend access to storm drain if threats of serious physical harm to humans or the environment are possible.
- c. Direct responsible party to initiate repairs/corrections/cleanup. Coordinate with enforcement official for escalating penalties in accordance with the municipal ordinance.

- d. Repair/correct cause of discharge if municipality is responsible. Schedule the work through the appropriate municipal authority or department head.

IDDE – Tracing Illicit Discharges

1. Process

- a. Survey the general area / surrounding properties to identify potential sources of the illicit discharge as a first step.
- b. Trace illicit discharges using visual inspections of upstream points as a second step. Use available mapping to identify tributary pipes, catch basins, etc.
- c. If the source of the illicit discharge cannot be determined by a survey of the area or observation of the storm drain system, then consider the following additional steps:
 - 1. Use weirs, sandbags, dams, or optical brightener monitoring traps to collect or pool intermittent discharges during dry weather.
 - 2. Smoke test or televise the storm drain system to trace high priority, difficult to detect illicit discharges.
 - 3. Dye test individual discharge points within suspected buildings.
 - 4. Consider collecting bacterial samples of flowing discharges to confirm/refute illicit discharge.
- d. When the source is located, follow SOP IDDE - Removing Illicit Discharges.

Appendix B

Standard Operating Procedure: Dry Weather Field Screening

Responsible staff: City Staff
Contractor

Equipment: Tablet

Material:

Procedure:

1. The dry weather screening process can only be performed once 72 hours have passed since any precipitation.
2. The Locate outfall and corresponding outfall inspection form on the Excalibur Work Order System.
3. Inspect for any flowing or ponding. Estimate flow rate and report on inspection form
4. Check for color, odor, surface scum, algal bloom, floatables, oil sheen, deposits or strains (noting color), and turbidity and report on inspection form.
5. Note if animals or vegetation are present
6. Note the length of stream impacted by outfall.

Sampling

1. On a case by case basis determine if testing is needed.
2. If so the City will work with neighboring municipalities, or a water testing service may be used to do the testing.
3. Once we have the testing kit follow instructions given for taking samples.
4. Possible parameters sampled for and analyzed when deemed applicable include but are not limited to
 - pH;
 - Oil and grease;
 - E.Coli or fecal coliform;
 - Surfactants or fluorescence concentration;
 - Specific conductivity;
 - Ammonia;
 - Chlorine;
 - Dissolved oxygen; and
 - Fluoride/ hardness.

Appendix C

The City of Gladstone Dry Weather Screening Program

Dry weather screen should only be performed once a minimum of 72 hours have passed since any last reported rainfall. The City will perform dry weather screening of 60% of the City's outfalls during each permit cycle using our electronic work order system, Excalibur. Inspections first look at the physical condition of the out fall to ensure it is functioning properly. Then checked for flow and water quality indicators such as odor, color, turbidity, deposits, and floatables. We then describe any indicators and actions we deem necessary and take photos. The City has an IDDE SOP's in place. If we find any indicators of illicit discharges of unknown origin we move to IDDE- Tracing illicit Discharges section of our IDDE SOP. If the origin is known we move to IDDE- Removing Illicit Discharges section of our IDDE SOP. When flow is present 72 hours after a rainfall event the City may determine testing is required. Parameters sampled for and analyzed when deemed applicable include but are not limited to;

- pH;
- Oil and grease;
- *E.Coli* or fecal coliform;
- Surfactants or fluorescence concentration;
- Specific conductivity;
- Ammonia;
- Chlorine;
- Dissolved oxygen; and
- Fluoride/ hardness

The City will develop two out fall maps. Each map will represent 60% of the outfalls. The first 60% will be covered in year one followed by another 60% in year 2. The process will rotate ensuring we cover all of the outfalls every two years and 60% each year. Each year the program will be evaluated for effectiveness and make any changes at that time.

Priority Areas

Priority areas are areas that the City has deemed to be at a high risk for illicit discharges. The Outfalls in these areas must have 100% of the outfalls dry weather screened each year. Each year the City will evaluate this section of our program and make any changes at that time.

Procedure:

1. The dry weather screening process can only be performed once 72 hours have passed since any precipitation.
2. Locate outfall and corresponding outfall inspection form on the Excalibur Work Order System.
3. Inspect for any flowing or ponding. Estimate flow rate and report on inspection form
4. Check for color, odor, surface scum, algal bloom, floatables, oil sheen, deposits or strains(noting color), and turbidity and report on inspection form.

5. Note if animals or vegetation are present.
6. Note the length of stream impacted by outfall.

Sampling

1. On a case by case basis the City will determine if testing is needed.
2. If so the City will work with neighboring municipalities for testing, or a water testing service may be used.
3. Once we have the testing kit follow instructions given for taking samples.
4. Possible parameters sampled for and analyzed when deemed applicable include but are not limited to
 - pH;
 - Oil and grease;
 - E.Coli or fecal coliform;
 - Surfactants or fluorescence concentration;
 - Specific conductivity;
 - Ammonia;
 - Chlorine;
 - Dissolved oxygen; and
 - Fluoride/ hardness.

Appendix D

City of Gladstone Stormwater Construction Site Inspection Report

General Information	
Project name/number:	
Date of inspection:	Time of inspection:
Inspectors Name:	Present phase of work:
Type of Inspection: ☐ Regular ☐ Pre-Storm Event ☐ During Storm Event ☐ Post-Storm Event	
Has there been any rain since last inspection: ☐ YES ☐ NO If yes, provide: Storm Date/Time: Approximate Amount of Rainfall:	
Weather at Time of Inspection: ☐ Clear ☐ Cloudy ☐ Raining ☐ Sleetng ☐ Fog ☐ Snowing ☐ High Winds ☐ Other: Temperature:	
Have any discharges occurred since last inspection? Yes ☐ No ☐ If yes, describe:	
Are there any discharges at time of inspection? Yes ☐ No ☐ If yes, describe:	

Signature of Inspector

Printed Name & Title

Date

Site BMP Checklist			
BMP/Activity	Implemented?	Maintenance Required?	Corrective Actions Needed/Notes
All inactive slopes and disturbed areas have been stabilized	☐ YES ☐ NO	☐ YES ☐ NO	
Are natural resource areas Protected with barriers or similar BMP?	☐ YES ☐ NO	☐ YES ☐ NO	

Are all sanitary waste receptacles placed in secondary containment and free of leaks?	☐ YES ☐ NO	☐ YES ☐ NO	
Are all discharge points and receiving water free of sediment?	☐ YES ☐ NO	☐ YES ☐ NO	
Are storm drain inlets properly protected?	☐ YES ☐ NO	☐ YES ☐ NO	
Is the construction exit preventing sediment from being tract off site?	☐ YES ☐ NO	☐ YES ☐ NO	
Is Trash/Litter from work area collected and places in a covered dumpsters?	☐ YES ☐ NO	☐ YES ☐ NO	
Are washout facilities available, clearly marked and maintained?	☐ YES ☐ NO	☐ YES ☐ NO	
Are vehicle/equipment fueling and maintenance areas free of spills and leak?	☐ YES ☐ NO	☐ YES ☐ NO	
Are Materials that are potential stormwater contaminants stored inside or undercover?	☐ YES ☐ NO	☐ YES ☐ NO	
Are non-stormwater discharges Properly controlled?	☐ YES ☐ NO	☐ YES ☐ NO	
Other:	☐ YES ☐ NO	☐ YES ☐ NO	

Appendix E

Standard Operating Procedure: Street Sweeping SOP's

Responsible staff: City Staff

Equipment: Sweeper/Wash Bay

Material: Water

Activities and Definition

Pollutants collect on surfaces in between storm events as a result of atmospheric deposition, vehicle emissions, winter road maintenance, construction site debris, trash, road wear and tear, and litter from adjacent lawn maintenance (grass clippings).

Sweeping of materials such as sand, salt, leaves and debris from city streets, parking lots and sidewalks prevents them from being washed into storm sewers and surface waters.

Timing, frequency and critical area targeting greatly

Preparation

- a) First while conducting the pre-trip inspection be sure no fluids have leaked out. If so jump to out Spill clean-up SOP to properly clean the area.
- b) Prioritize cleaning routes to use at the highest frequency in areas with the highest pollutant loading.
- c) Restrict street parking prior to and during sweeping using regulations as necessary.
- d) Increase sweeping frequency just before the rainy season, unless sweeping occurs continuously throughout the year.
- e) Perform preventative maintenance and services on sweepers to increase and maintain their efficiency.

Start up and Pre-Trip Inspectioun

GET DETAILS FROM JODY

Process

- a) Streets are to be swept at a minimum of twice annually, or as needed or specified by the city; Street maps are used to ensure all streets are swept at a specific interval.
- b) Drive street sweeper safely and pickup debris.
- c) When full take the sweeper back to the shop to clean out.

Clean-up/Follow-up

- a) Street sweepers are to be cleaned out in the emptied in our landfill area and then taken to the wash bay to clean out the hopper.
- b) Refill and park safely in the Garage.

Appendix F

Standard Operating Procedure

Construction site Stormwater Inspection

Responsible staff: Engineering Division Personnel

Equipment: Inspection forms, Camera

Material: N/A

1. Plan the inspection before visiting the construction site
 - a) Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
 - b) Inform the contractor if it is a planned site visit.
 - c) If not the inspector can choose when they would like to visit the site.
2. If it's a scheduled visit meet with the contractor
 - a) Review the Construction SWPPP if needed or other document, as required by the municipality's legal authority. Compare BMPs in the approved site plans with those shown in the SWPPP.
 - b) Get a general overview of the project from the contractor.
 - c) Review inspections done by the contractor.
 - d) Review the status of any issues or corrective actions noted in previous inspection reports.
 - e) Discuss any complaints or incidents since the last meeting.
3. Inspect perimeter controls
 - a) Using the City's storm water inspection form to complete the inspection. Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
 - b) For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.
4. Inspect slopes and temporary stockpiles
 - a) Determine if sediment and erosion controls are effective.

- b) Look for slumps, rills, and tracking of stockpiled materials around the site.
- 5. Compare BMPs in the site plan with the construction site conditions
 - a) Determine whether BMPs are in place as specified in the site plan, and if the BMPs have been adequately installed and maintained.
 - b) Note any areas where additional BMPs may be needed which are not specified in the site plans.
- 6. Inspect site entrances/exits
 - a) Determine if there has been excessive tracking of sediment from the site.
 - b) Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
- 7. If applicable Inspect sediment basins
 - a) Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
- 8. Inspect pollution prevention and good housekeeping practices
 - a) Inspect trash areas and material storage/staging areas to ensure that materials are properly maintained and that pollutant sources are not exposed to rainfall or runoff.
 - b) Inspect vehicle/equipment fueling and maintenance areas for the presence of spill control measures and for evidence of leaks or spills.
- 9. Inspect discharge points and downstream, off-site areas
 - a) Walk down the street and/or in other directions off-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
 - b) Inspect down-slope catch basins to determine if they are protected and identify whether sediment buildup has occurred.
- 10. Meet with the contactor prior to leaving
 - a) Discuss the effectiveness of current controls and whether modifications are needed.
 - b) Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, and/or the implementation of stormwater controls.

- c) Agree on a schedule for addressing all discrepancies and schedule a follow-up inspection.
- 11. Provide a written copy of the inspection report to the contractor.
- 12. Follow up, as determined, and provide copy of subsequent inspection to the contractor.
- 13. Use Stop Work orders, as needed, until compliance with the City's BMP's and SWPPP can be achieved.

Appendix G

Standard Operating Procedure

Erosion and sediment control for Construction Sites

Responsible staff: Storm sewer crew

Public Works Administration - Contractor

Equipment: track hoe, skid loader, dump truck, combination truck (jet and vacuum), camera truck

Material: Storm pipe (CPP & CMP), concrete, rock (incl. rip-rap), storm structures (concrete & PVC), erosion control material, dirt and seed/plantings.

During the construction phase, it is important to inspect active sites regularly to ensure that practices are consistent with approved site plans and the site's Stormwater Pollution Prevention Plan (SWPPP) or other document, as required by the municipality's legal authority. The following guidelines apply:

1. Erosion and sediment control features should be constructed before initiating activities that remove vegetated cover or otherwise disturb the site. These shall be installed consistent with the approved site plans and with manufacturer's instructions.
2. Erosion and sediment control devices shall be inspected by the contractor regularly and maintained as needed to ensure function.
3. In the SWPPP or other document, the contractor shall clearly identify the party responsible for maintaining erosion and sediment control devices.
4. The City shall require the construction site operator to conduct inspections at minimum: Every fourteen (14) days, when construction is active. AND Within 72 hours of any storm event, and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased.
5. Existing vegetation should be maintained on site as long as possible.
6. Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed.
7. Disturbed areas shall be protected from stormwater runoff by using protective Best Management Practices (BMPs).
8. Clean water shall be diverted away from disturbed areas on construction sites to prevent erosion and sedimentation.
9. Sediment traps and sediment barriers should be cleaned out regularly to reduce clogging and maintain design function.
10. Vegetated and wooded buffers shall be protected.
11. Vegetation shall be allowed to establish before introducing flows to channels.
12. Regular light watering shall be used for dust control, as this is more effective than infrequent heavy watering.
13. Excessive soil compaction with heavy machinery shall be avoided, to the extent possible.
14. Construction activities during months with higher runoff rates shall be limited, to the extent possible.

Appendix H

Standard Operating Procedure: Vehicle Washing Procedures

Responsible staff: City Staff
Contractor

Equipment: Wash bay and Pressure washer or hose

Material:

Procedure:

1. All vehicles must be pulled all the way into the wash bay to prevent any wash water from leaving the wash bay.
2. Wash vehicles thoroughly being sure to remove salt and other chemicals from the vehicles after snow events.
3. Any wash water that contains pollutants such as salt, oils, grease, sediment, grass clippings, lawn chemicals, or pesticides shall not leave the wash area.
4. Once the vehicle has been thoroughly washed it should be pulled out of the wash bay and anything on the wash bay floor rinsed into our sediment collection pit for proper disposal at a later date.

Measureable Goals SPREADSHEET FORMAT:

Please note, the guidance language in grey text in the top row of MCM #1 in the spreadsheet applies to all subsequent rows' BMPs in the spreadsheet. Additional grey text guidance notes are also given where applicable. Also, please note that only one placeholder for a BMP is listed per permit requirement. The permittee may choose to add multiple BMPs under one permit requirement. Please number accordingly.

EXAMPLE:

(Please see below. Zoom in document for detail. For the complete version of the spreadsheet (includes all MCMs), please send a request to MS4@dnr.mo.gov.)

Permit Requirement	Permit Section	BMP Description	BMP Purpose	Responsible Person (optional - only if multiple people on MS4 team)	Goal/Expected Result of BMP	Measurable Goals, Milestones, and Dates	Measurable Goals, Milestones, and Dates	Measurable Goals, Milestones, and Dates	Measurable Goals, Milestones, and Dates	Measurable Goals, Milestones, and Dates	BMP Evaluation	BMP Success/Modification
						Permit Year 1	Permit Year 2	Permit Year 3	Permit Year 4	Permit Year 5		
Identifying target audiences of significant pollution	MCM1 4.1.A	1 (What is the BMP? Be sure the description of the BMP is clear.)	(What is the purpose of the BMP? What is the point? What makes this BMP suitable for your MS4 and target audiences?)	(Make sure the RP is listed at the beginning of the SWMP box.)	(What do you expect to see out of this BMP? Behavioral or environmental change? Increased public involvement? Decreased pollutants? Etc.)	(What is your goal for year 1? Do you have a milestone to complete? Do you have a deadline? Use percentages, numbers, increasing or decreasing trends where possible.)	(What is your goal for year 2? Do you have a milestone to complete? Do you have a deadline? Use percentages, numbers, increasing or decreasing trends where possible.)	(What is your goal for year 3? Do you have a milestone to complete? Do you have a deadline? Use percentages, numbers, increasing or decreasing trends where possible.)	(What is your goal for year 4? Do you have a milestone to complete? Do you have a deadline? Use percentages, numbers, increasing or decreasing trends where possible.)	(What is your goal for year 5? Do you have a milestone to complete? Do you have a deadline? Use percentages, numbers, increasing or decreasing trends where possible.)	(Criteria you look at during BMP evaluation to ensure goals are met - What you must see to determine if BMP is successful or not.)	(Use this for data tracking for your annual reports - Does not need to be completed for SWMP. Was the BMP successful or not? What was modified?)
Additional target audiences of significant pollution (list all that apply)	MCM1 4.1.A	1a										
Identifying target pollutants and sources of pollutants related to target audiences	MCM1 4.1.B	2	(Specify how the pollutants/sources relate to the target audiences.)									
Inform target audiences of target pollutants and how they can contribute	MCM1 4.1.C	3	(Specify how the BMPs inform and educate target audiences to reduce pollutants in stormwater runoff.)									
Provide public notice period for public to review/comment on SWMP (includes public notice of public meeting)	MCM2 4.2.A, 4.2.B	1				(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)		
Provide public meeting for public to review SWMP and application and voice comments.	MCM2 4.2.B	2				(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)	(Only necessary for significant changes to the SWMP or during permit renewal.)		
Provide publicly available method to accept comments from public.	MCM2 4.2.C	3										
Stormwater Management Committee - provide opportunities for citizen representatives	MCM2 4.2.D	4										
Maintain storm sewer system map	MCM3 4.3.A	1										
Illicit Discharge Ordinance	MCM3 4.3.B	2										
Plan to detect and address unauthorized non-storm water discharges	MCM3 4.3.C	3										
Inform public employees, businesses, general public of hazards of illegal discharges and improper waste disposal	MCM3 4.3.D	4										
Dry weather field screening plan	MCM3 4.3.E	5										
Procedures to identify priority areas likely to have illicit discharges	MCM3 4.3.F	6										
Procedures to ensure illicit discharge ordinance is implemented... enforcement, fines, actions	MCM3 4.3.G	7										

