

OBJECTIVES

- Reduce or prevent polluted discharges associated with roads and streets
 - Operational Protocols
 - Specific Pollutants
 - Non-stormwater discharges
 - General Practices
 - Spill Response and Control
 - Special Considerations
- Considerations for specific activities associated with roads and streets
 - Repairs
 - Street Sweeping
 - Unpaved pathways
 - Sidewalks
 - Other Considerations
- Implement and conduct activities aimed at pollution prevention
 - Training
 - Enforcement

DESCRIPTION

Daily use of roads and streets within a municipality can generate a build-up of pollutants including sediment. Along with certain maintenance activities (asphalt repairs, etc.), an increase in the potential for polluted discharges can occur. Most pollutants associated with streets and roads include, but are not limited to hydrocarbons, sediment, debris (litter, etc.), and metals. Implementation of certain practices including street sweeping will reduce pollutants in stormwater runoff and polluted discharges.

CONSIDERATIONS

Roads and streets generally comprise a majority portion of municipal infrastructure. Coupled with the fact a majority of a storm sewer system is located within defined boundaries of roads and streets with definitive points of entry (inlets, etc.) for stormwater, a large portion of focus should be afforded to proper road and street maintenance to reduce the potential of polluted runoff and direct polluted discharges that would be conveyed to receiving waterways.

Surrounding land use should be considered when developing site-specific road and street maintenance programs. Activities on adjacent lands can result in pollutants being conveyed by roads and streets and ultimately discharge into receiving waterways via the storm sewer or directly to waterways.

Consider incorporating pervious pavement into the roadway system through a transportation improvement plan or green infrastructure plan. Pervious pavements tend to reduce the runoff potential of polluted stormwater and runoff in general. Consider locations where relative large amounts of runoff are observed. Requirements for allocating a certain amount of pervious pavement with development or repair projects can be defined in the ordinance as well.

Toxic substances or chemicals (including metals, oils, and so on) can easily bind to sediment. Protecting inlets from sediment-rich runoff will reduce the potential of pollutant loads to receiving waterways.

Certain maintenance activities may be subject to an NPDES Construction Permit—specifically for earth disturbance activities.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for road and street maintenance:

Reduce or prevent polluted discharges associated with roads and streets

Operational Protocols

- Install containment or temporary-type BMP devices at inlets or locations that could convey polluted water prior to any repair or maintenance activities
- Schedule pavement marking activities for dry weather periods
- Do not apply paints, caulks, and so on during wet weather or immediately prior to forecasted rain events where materials would not be allowed to dry.
- Do not load hot paint or thermoplastic materials near drain inlets for line painting activities
- Schedule asphalt and concrete activities for dry weather
- Install temporary-type BMPs (inlet covers, containment berms, etc.) prior to maintenance activities with inlets (and waterways) in the vicinity
- Wash concrete trucks off site or in designated areas
- Store repair materials under cover and away from inlets and waterways
- Prevent excess materials (concrete, asphalt, stone, etc.) from entering inlets
- Sweep, do not wash down, streets and roads with tracked dirt or sediment

Specific Pollutants

- Sweep areas to collect and properly dispose of litter and debris
- Use filter socks, gravel bags, and other temporary-type BMPs to control the potential for sediment or debris from entering inlets and drains
- Do not maintain repair equipment or store repair materials near inlets

Non-stormwater discharges

- Sweep areas to collect and properly dispose of litter and debris
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and associated considerations

General Practices

- Use the least toxic materials available for any practices associated with road and street maintenance
- Sweep debris up from maintenance activities such as thermoplastic grindings
- Thoroughly clean up areas of repair and maintenance at the end of the work day or the end of maintenance/repair activities
- Do not allow water from sawcut operations (or similar) to enter inlets and drains unabated
- Complete general observations of road and street areas (including areas where repairs are being conducted) for sediment build-up, and so on

Spill Response and Control

- Have spill clean-up materials readily available
- Refer to BMP Fact Sheet GH-10, Spill Prevention and Control for more information

Special Considerations

- Maintain repair and application equipment to reduce the potential of leaks from such equipment
- Vegetation along roadsides should be maintained in an appropriate manner to reduce pollutant loads in stormwater runoff
- Water is generally used for dust control activities. Use minimal amounts of water for dust control. Ensure inlets or waterways are protected from potential runoff

Considerations for specific activities associated with roads and streets

Repairs

- Provide and maintain concrete washout areas for concrete (or similar) operations
- Limit amount of fresh concrete or asphalt prepared, prepare only what is needed
- Consider alternative patching materials than concrete or asphalt
- For slurry seal, seal coats, and so on, cover and seal off (water-proof materials) nearby inlets or drains prior to commencing activities
- Thoroughly clean up repair area sites when work is complete.

Street Sweeping

- Maintain a consistent street sweeping schedule
- Refer to BMP Fact Sheet GH-33 for street sweeping for more information.
- Increase street sweeping activities (including hand sweeping) in actual maintenance areas

Unpaved pathways

- Stabilize exposed soils or gravel pathways to reduce erosion potential
- Maintain vegetation adjacent to unpaved pathways. If vegetation cannot be established, consider temporary-type BMPs as semi-permanent controls

Sidewalks

- Provide and maintain concrete washouts for concrete operations
- Ensure sidewalks are routinely swept or cleaned
- Consider vegetated buffers between sidewalks and roadways to reduce the potential of pollutants being conveyed by roads or streets

Other Considerations

- Refer to BMP Fact Sheet GH-32 for winter road maintenance for other considerations including road salt applications
- See BMP Fact Sheet GH-47 for considerations regarding Bridge Maintenance
- Schedule repair activities associated with graffiti removal, paint removal, or similar during dry weather.

Implement and conduct activities aimed at pollution prevention

Training

- Refer to BMP Fact Sheet GH-1 regarding training for more information
- Train employees regarding proper maintenance activities and recommendations outlined in this BMP fact sheet and related fact sheets

Enforcement

- Ensure inlets or drains are protected near repair or construction activity sites, including activities by others
- Consider monetary fines for illegal dumping or pollutant loads generated by others that result in conveyance of pollutants on municipal roads and streets
- Ensure roads and streets are cleaned near repair or construction activity sites, including activities by others

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For road and street maintenance, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to road and street maintenance.
- **Training and Education Log:** Enter a completed training record into the log.
- **Event Record:** If a discharge or is observed during a repair or maintenance activity, an event record should be executed that also outlines response and remediation procedures. Furthermore, since the road and street system is generally one of the largest portions of infrastructure (and conveyor of stormwater), an event record should be completed for major rain events. Other events such as observed polluted discharges or illicit discharges should be recorded.
- **Activity Record:** Complete when remediation is conducted or improvements are made to roads and streets. Note protection measures of inlets, waterways, and so on that were implemented.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for road and street maintenance into the log as outlined within this BMP.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for roads and streets is recommended as follows:

- *Regular Inspection:* Conduct a regular inspection of roads and streets based on an applicable frequency. An applicable frequency should be determined based on the use of the road or street. Focus should be afforded to roads and streets with inlets or direct points of entry to waterways.

Items that should be inspected and maintained (and recommended maintenance actions):

Cleanliness: Sweep and remove debris or trash

Inlets: Ensure clean and free of sediment and debris

Clean-outs: Ensure structurally sound, remove debris and sediment (if applicable)

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build-up. Replace cracked or leaking clean-outs

Integrity of roads/streets: Ensure structurally sound and proper drainage is achieved

Operational reviews: Ensure observed practices are in line with recommendations outlined in this fact sheet

Temporary-type BMPs: Silt fences, straw "wattles, concrete washouts, and so on should properly installed and functioning. Remove built-up debris or sediment as necessary. Replace defunct or damaged materials.

Effectiveness can be demonstrated through a combination of appropriate documentation practices and in conjunction with a monitoring program. Analytical monitoring conducted under the requirements of Minimum Control Measure (MCM) #3 can be used to measure effectiveness of this BMP. Improved analytical results can be attributed to proper implementation and maintenance of the practices recommended in this fact sheet.

The EPA provides numerical effectiveness values for certain practices outlined within this fact sheet including maintaining roadside vegetation and street sweeping.

SOURCES

U.S. Environmental Protection Agency Roadway and Bridge Maintenance at <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=100&minmeasure=6>

California Stormwater Quality Association, Municipal Stormwater Best Management Practice Handbook (2004 edition) at <http://www.cabmphandbooks.com/Municipal.asp>

Oregon Department of Transportation Routine Road Maintenance Manual at http://www.ci.gladstone.or.us/NPDES/ODOTresearch-roadside_maintenance_manual.pdf

Seattle Department of Transportation BMP Reference Manual for Surface Repairs and Minor Road Maintenance at <http://www.ecy.wa.gov/programs/wq/stormwater/municipal/MUNIdocs/StreetMaintenanceSurfaceRepairMinorRoadMaintenance2008.pdf>

Pennsylvania Department of Environmental Protection; final version of PAG-13 at <http://files.dep.state.pa.us/Water/Watershed%20Management/WatershedPortalFiles/StormwaterManagement/PAG-13/FinalPAG-13.pdf>