

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)  
OPERATION AND MAINTENANCE & TRAINING MANUAL**

**MANUAL 4 OF 4**

**NPDES PERMIT NO. PAG136194**



**CITY OF DUQUESNE  
ALLEGHENY COUNTY, PA  
12 SOUTH SECOND STREET  
DUQUESNE, PA 15110**

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## **P. PREFACE**

Part C of the MS4 NDPES Permit requires the permittee (City) to develop, implement and enforce a Stormwater Management Program (SWMP). One of the requirements is to develop written plans that describe the goals that should be met and describe the procedures to be followed by the municipality to implement and measure the effectiveness of these procedures. In order to meet these requirements and to educate the necessary personnel, the municipality has developed the following manuals:

1. Public Education and Outreach and Public Involvement/Participation Joint Program
2. Illicit Discharge Detection and Elimination Program
3. Construction & Post Construction for Stormwater Management Program
- 4. MS4 Operation and Maintenance & Training Manual**

Manual 1 presents the objectives of the PEOP and PIPP requirements (MCM #1 & #2)

Manual 2 addresses the water quality issues involved with IDD&E. (MCM #3)

Manual 3 provides a discussion of the regulatory requirements (MCM #4 & #5)

Manual 4 explains operation and maintenance procedures as well as employee training. (MCM #6)

## **Introduction**

This manual contains stormwater good housekeeping practices, pollution prevention and protocols, and control measures for specific operations and activities for the prevention of nonpoint sources of pollution within the City.

This manual has been developed for all City Employees, who can utilize the document as part of their NPDES Municipal Stormwater (MS4) permit stormwater management program addressing illicit discharges and municipal stormwater good housekeeping.

# Catch Basin and Storm Drain System Cleaning and Maintenance



**Goal:** Reduce sediments loading to receiving waters

## Part A: Information & Training

**Overview:** Catch basins can capture sediments and sediment-bound pollutants in stormwater. A factor that is critical to the effectiveness of a catch basin at removing sediments is regular maintenance to remove the accumulated sediments and other debris.

### Applicable Operations and Activities:

- Removing Sediments/debris
- Repair inlets/ditches/swales

### Targeted Pollutants:

- Sediment
- Nutrients
- Bacteria
- Organic Matter
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Abnormal pH
- Trash and Debris
- Detergents
- Fertilizer
- Pesticide

### BMPs:

- Repair/replace catch basins, grates and pipes as necessary.
- Clean catch basins, ditches and outfalls on regular basis and as necessary.

### Inspection Procedures:

- Prioritize storm drain system and catch basins for routine maintenance.
- Clean catch basins when depth of deposits is < 1/3 the depth from the bottom of the basin to the invert of the lowest pipe/opening into or out of basin.
- Clean ditches to maintain hydraulic capacity by removing accumulated sediments and debris.
- Inspect stormwater conveyance facilities immediately following heavy storms to identify any issues and to remove any blockages.

## **Catch Basin and Storm Drain System Cleaning and Maintenance (Continued)**

### **Maintenance Procedures:**

- Catch basins/storm sewer pipe – clean in spring to remove sand/grit/salt from winter road maintenance. Clean in fall to remove leaves/silt/debris.
- Establish ditches:
  - Maintain proper slope.
  - Maintain vegetation
  - Remove obstacles/debris (i.e., trash, tree branches, brush, cut vegetation).
  - Excavation/ditch scraping – if necessary, use devices (i.e., hay bales, silt fence) to capture sediments prior to stormwater discharge into receiving waters, reseed ditch.
  - Properly dispose of collected debris.

**Measurable Goal:** Document inspections and any actions taken. Identify City Ditches.

# Chemical Application



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from chemical applications undertaken outdoors for pest control, wood treatment, and other applications.

## Part A: Information & Training

**Overview:** Pesticides, herbicides, wood preservatives and other chemicals are often used outdoors for pest management, building and grounds maintenance, water proofing and sealing, dust and sediment management, and other processes. Chemicals applied outdoors can pollute stormwater either through direct contact with rain or through stormwater runoff coming into contact with treated areas and surfaces.

**Application Operations and Activities:** Any outdoor chemical application such as:

- Pesticide/herbicide/fungicide treatment (other than landscaping activities)
- Lumber and wood treatment
- Sealing and waterproofing
- Dust or sediment management and control

**Pollution Control Approach:** Practice proper application of chemical treatments and handling of chemicals to reduce the potential of contamination of stormwater runoff.

**Targeted Pollutants:**

- Heavy Metals
- Toxic Chemicals
- Pesticides, Other Chemicals

**BMPs:**

- Never apply chemicals outdoors when it is raining or if there is a significant chance of rain in the forecast.
- Avoid excessive application of the chemical. Always follow the manufacturers' application guidelines and directions for appropriate amounts and application conditions.
- Use the smallest amount of chemicals necessary to accomplish the intended purpose.
- Consider the use of a less toxic alternative to perform the required task.
- Use drip pans or absorbent pads to capture drops and spill when transferring liquid chemicals.
- Avoid mixing or applying chemicals near stormwater drain, drainage ditches or surface water.

- Inspect application equipment, sprayers and hoses for leaks, loose fittings and improper or poor fitting gaskets. Leaks should be repaired immediately or equipment removed from service.
- When applying chemicals on rooftops and impervious surfaces, downspouts and stormwater drains should be covered.
- Protect nearby stormwater drains with covers, filter fabric, or a secured liner for all drainage areas treated by the chemical application or/over which outdoor chemical application processes have occurred.
- Immediately clean up and properly dispose of any chemical leaks or spills using appropriate methods and materials. Do not hose down leaks or spills to a stormwater drain, drainage ditch or surface water.
- Follow all pollution prevention practices and guidance for hazardous materials and waste handling. (See section Hazardous/Waste Management)

**Inspection Procedures:**

- **Daily** – Inspect application equipment for leaks, loose fittings and improper or poor fitting gaskets. Leaks should be repaired immediately or equipment removed from service.

**Spill Prevention and Response:**

- Develop Standard Operating Procedures (SOPs) for spill prevention and clean up.
- Store and maintain appropriate spill cleanup materials in a location near the chemical application area(s).



# **Construction and Land Disturbance**



**Goal:** Limit sediments runoff to receiving waters.

## **Part A: Information & Training**

**Overview:** All disturbed areas of soil must be protected from eroding, especially steep slopes and large exposed areas. Soil should be stabilized so it does not invade neighboring property or wash into stormwater drains, streams or river. All stormwater drains or other means of transporting stormwater both natural and manmade must be protected at all times during construction.

### **Applicable Operations and Activities:**

- All City projects that involve land disturbance.

### **Targeted Pollutants:**

- Erosion
- Sediment
- Organic Matter
- Oil and Grease
- Trash and Debris
- Hydrocarbons

### **BMPs:**

#### **Erosion Control:**

- Construct soil binders, or silt fencing and straw bales to help disturbed soil.
- Establish earth dikes and drainage swales.
- For steep slopes, use rip rap to prevent erosion.
- Multiple forms of erosion control must be utilized in highly concentrated water flow areas.
- Plan the construction and/or land clearing activities so that soil is not exposed for long periods of time.
- Limit grading to small areas.

## **Construction and Land Disturbance (Continued)**

### **Sediment Control:**

- Minimize compaction of soils for infiltration
- Maximize opportunities for infiltration.
- Stabilize site to protect against sediment runoff.
- Protect against sediment flowing into storm drains.
- Maintain native vegetation (especially near waterways).
- Install sediment barriers on slope to divert stormwater.
- Install sediment control devices before disturbing soil.
- On steeper banks, place fiber rolls or erosion control blankets.
- Construct a sediment trap or sediment basin.
- To drain water from site, direct the water through silt socks or use sediment filters or traps to remove sediment. Pumped water shall be directed to a pumped water filter bag.
- All erosion and sediment controls must remain in place until vegetation has a good growth.

### **Excavations:**

- Do not use herbicides to kill vegetation. Use mechanical means to clear the area.
- Put in place proper erosion control practices before excavation.
- Temporarily block off adjacent stormwater inlets with sandbags and silt socks.
- Only clean fill may be used. Fill containing wood, plastic, or metal materials is not permitted.
- Provide a temporary soil stabilization if site will remain dormant for longer than 30 days. Soil stabilization includes seeding, mulches, blankets or mats and soil binders. If the site is to remain dormant more than one year, use permanent stabilization such as permanent seeding and planting, sodding, channel stabilization and vegetative buffer strips.

### **Inspection Procedures:**

- Regularly scheduled inspections (of sediment control devices, erosion safeguards).
- Inspect during storm or snow melt events.

### **Maintenance Procedures:**

- Check/repair all devices that have been installed to ensure protection against erosion.

**Measurable Goal:** Document inspections and any actions taken.

# Fueling Operations



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from vehicle and equipment fueling activities

## Part A: Information & Training

**Overview:** Fueling operations include vehicles, equipment, or small containers with gasoline, diesel fuel, kerosene, or other petroleum products. Spill and leaks that occur during fueling can contaminate stormwater runoff, surface water and groundwater with toxic hydrocarbons, oil and grease, and heavy metals.

### Applicable Operations:

- Fleet Maintenance Yards
- Mobile Fueling Operations
- Any Other Site Fueling Vehicles or Equipment

**Pollution Control Approach:** Maximize the prevention of leaks and spills, and ensure that any leaked or spilled fuel is properly cleaned up.

### Targeted Pollutants:

- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris
- Gasoline and Other Fuels

### BMPs:

#### For All Fueling Operations:

- Never fuel vehicles and equipment unattended.
- Post signs at the fuel dispenser or fuel island reminding users not to top off fuel tanks when filling, which can increase the risk of spilling fuel onto the ground.
- Ensure the following safeguards are in place:

## **Fueling Operations (Continued)**

- Fuel dispensing equipment and pumps are equipped with automatic shutoffs and overflow protection to prevent spills and leaks.
- Protective guards around pumps, tanks and piping to prevent damage from vehicles.
- Clear tagging or labeling of all equipment, pumps, and valves.
- Install vapor recovery nozzles and systems to help control drips and protect air quality.
- Maintain clean fuels dispensing areas using dry cleanup methods such as sweeping for removal of litter and debris, and the use of rags and absorbents for leaks and spills. Absorbents should be removed promptly and disposed as hazardous waste.

### **For Stationary (Permanent) Fueling Operations:**

- Cover the fueling area with an overhanging roof structure or canopy so that rain cannot come in contact with the fueling area.
- Label drains within the facility by paint/stencil, sign, or marker to indicate whether they flow to an oil/water separator, sanitary sewer, or stormwater drain.
- Use secondary containment when transferring fuel from a tanker truck to onsite fuel tanks. Cover storm drains in the vicinity during transfer.

### **For Mobile Fueling Operations:**

- Use off-site stationary fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly.
- All fueling operations should be located to ensure that spills or leaks will not discharge, flow or be washed to the stormwater drainage system, surface waters or groundwater.
- Place temporary caps over nearby catch basins and manhole covers so that if a spill occurs it is prevented from entering the stormwater drainage system.
- Use drip pans or absorbent pads to capture drips and spills during fueling. Absorbents must be removed promptly and disposed of as hazardous waste.
- If fueling is done during evening/night hours, lighting should be provided.
- Spill and clean up materials should be located in the mobile fueling vehicles.

### **Fueling Area Design Features:**

- Design fueling areas to prevent contact with rain and stormwater runoff:
  - Cover the entire fueling area with a roof or canopy structure.
  - Use berms or curbs to prevent stormwater runoff from flowing onto the fueling area.
  - Position roof downspouts away from fueling area.
- Fueling areas should be paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills surrounding the fueling area.
- Use a trench or perimeter drain around the fueling area or slope the pavement to a drain connected to a dead-end sump, and underground storage container which does not discharge to the stormwater drainage system. The sump captures and holds spilled fuel from the pad to be pumped out later.

## **Fueling Operations (Continued)**

- Install spill control devices (such as oil/water) in catch basins that collect stormwater runoff from the fueling area.
- Ensure that all stormwater from the site is treated by an appropriate structural/non-structural stormwater control.

### **Additional Considerations:**

- All specific standards set by Federal and State Laws concerning the storage of oil and hazardous materials must be met, including:
  - Spill Prevention Control and Countermeasure (SPCC) Plan
  - Secondary containment
  - Integrity and leak detection monitoring
  - Emergency preparedness plans

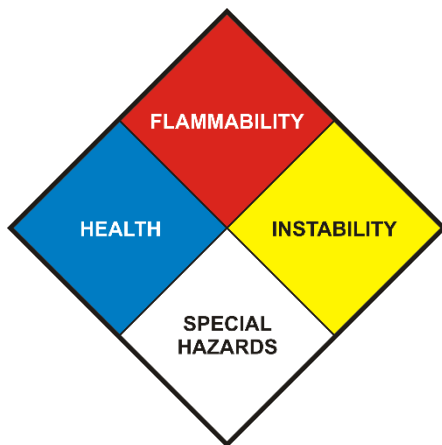
### **Inspection Procedures:**

- **Ongoing** – Inspect the fueling area to check for any material leaks or spills. Promptly clean using dry methods such as rags and absorbents. Promptly dispose of clean up materials and any contaminated soil.
- **Daily** – Inspect vehicles and equipment for leaks, loose fittings and improper or poor fitting gaskets. Leaks should be repaired immediately or equipment removed for service.
- **As needed** – Fueling areas should be swept and cleaned when needed. Trash and debris should be collected and disposed of properly. Do not hose down paved areas.
- **After the Storm** – Inspect spill control devices to remove separated floatable liquids. Properly dispose of captured fuel and other contaminants.

### **Spill Prevention Response:**

- Storing liquid petroleum and related materials, a Spill Prevention Control and Countermeasure (SPCC) Plan must be developed and kept up-to-date.
- Develop Standard Operating Procedures (SOPs) for spill prevention and clean up.
- Have some emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Store and maintain appropriate spill cleanup materials on site in a location near the fueling area(s).

# Hazardous and Waste Materials Management



**Goal:** Reduce and/or eliminate impacts to receiving waters from lube oils; coatings and their compatible solvents (paints, thinners, etc.); anti-freeze; cleaning agents; fuels (gas, diesel, kerosene)

## Part A: Information & Training

**Overview:** Hazardous material and wastes are those that “could cause injury or death; or damage or pollute land, air, or water”. This includes substances that are ignitable (flammable), corrosive, toxic, explosive, or reactive, i.e., react with air, water, or acids or bases. Specific definitions are found in the Code of Federal Regulations (40 CFR Part 261). Improper handling, transfer storage and disposal of hazardous materials and wastes can result in the contamination of stormwater runoff, surface water and groundwater.

### Applicable Operations and Activities:

- Toxic Chemicals
- Corrosive and Reactive Materials
- Ignitable and Flammable Materials

### Targeted Pollutants:

- Bacteria
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Abnormal pH
- Hazardous Materials

### BMPs:

- Material Safety Data Sheets (MSDS) must be available for each hazardous material used or generated at a facility, site or operation and should be followed for details regarding labeling, handling, storage, cleanup, and proper disposal.
- Ensure the all materials stored in closed, labeled containers. If stored outside, drums should be placed on pallets, away from storm receivers. Inside storage areas should be located away from floor drains.
- Whenever possible, store and handle hazardous materials and wastes indoors or enclosed storage sheds.

## **Hazardous and Waste Materials Management (Continued)**

- Outdoor handling and storage areas for hazardous material or waste containers should be paved and covered with an overhanging roof structure or canopy. Utilize a secondary containment system (such as curbing, berms, liner, or vault) where containers touch the ground to prevent contact with stormwater runoff and to contain spills. Smaller storage containers can be raised off the ground with a pallet or similar method, with provision for spill control.
- Label all containers of hazardous materials with the identity of the substance as shown on the MSDS as well as the appropriate hazard warning (health and physical hazards), according to Federal Regulations.
- All hazardous materials and wastes should be sealed in containers constructed of a suitable material. Ensure that each container is compatible with its contents. Containers must be in good conditions and not leaking.
- Containers must be closed at all times except when adding or removing hazardous materials or wastes.
- All spills and leaks of hazardous materials and wastes should be immediately cleaned up with the appropriate method and disposed properly.
- Storage of reactive, ignitable or flammable materials and waste should comply with the Uniform Fire Code and the National Electric Code, and any other applicable code.
- Follow appropriate practices and protocols for loading, filling and/or unloading of liquid materials.
- Never mix hazardous wastes.
- Use a pretreatment system to remove containments prior to discharge.
- Reduce stock of materials “on hand”.
- Use the least toxic materials (i.e., non-hazardous) to perform work.
- Minimize working quantities of hazardous materials stored on hand.
- Install/use secondary containment devices where appropriate.
- Eliminate wastes by reincorporating coating/solvent mixtures into the original coating material for reuse.
- Recycle materials if possible, or ensure proper disposal of wastes.
- Review MSDS for chemical compatibility guidance. Incompatible hazardous materials or wastes should be stored at least 20 feet apart and be separated by non-combustible partition, dike, berm, or secondary containment device.

### **Inspection Procedures:**

- Regular inspection of material storage areas (inside and outside).
- Regular inspection and cleaning of oil/water separators by qualified contractors.
- Inspect stormwater discharge locations regularly (for contaminants, soil staining, plugged discharge lines).

**Measurable Goal:** Document inspections and actions taken.

# Landscaping and Lawn Care and Vegetation Management



**Goal:** Prevent or reduce the risk of discharges of pollutants to stormwater from landscaping, lawn care and vegetation.

## Part A: Information & Training

**Overview:** Landscaping, lawn care and vegetation management include a wide variety of activities, including vegetation removal, lawn mowing, fertilizer and pesticide application, watering and other landscaping practices. Improper landscaping practices can result in the contamination of stormwater runoff with sediment, nutrients, organic materials, toxic chemicals, heavy metals, oils and trash. Leaves, grass clippings and other removed vegetation can also clog stormwater drain inlets and pipes, resulting in localized flooding and damage.

### Applicable Operations and Activities:

- Vegetation/Landscaping Installation
- Landscape Maintenance
- Grass Seeding and Sodding
- Mowing and Lawn Care
- Fertilizer Application
- Pesticide Application
- Water and Irrigation
- Vegetation Removal

**Pollution Control Approach:** Use proper landscaping practices to prevent the introduction of sediment, fertilizers, pesticides, and vegetation materials to the stormwater drainage system.

### Targeted Pollutants:

- Sediments
- Nutrients
- Bacteria
- Organic Matter
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris

**BMPs:** The City should be encouraged to use slow release or naturally derived (organic) fertilizers.

### Landscaping and Planting Activities:

- Leave grass clippings on lawn, or mulch clippings into lawn.
- Never blow clippings, leaves and other waste onto a stormwater drain or drainage ditch.
- All new trees should be planted away from sewer lines or underground utilities.
- Conduct soil disturbance activities during dry weather, cover stockpiled landscaping materials.
- Choose native plants and those that require less water and fertilizer.



## **Landscaping and Lawn Care and Vegetation Management** **(Continued)**

- Place temporary stockpiled landscaping materials, including soil and mulch, away from stormwater drains, drainage ditches and surface waters. Berm and cover stockpiles with secure waterproof tarps or plastic sheets to prevent exposure to rainfall and stormwater.
- Cover all stormwater drains before hydro-seeding.
- Protect and preserve open space buffer areas and instruct maintenance personnel to establish no-mow zones to allow trees and shrubs to reclaim disturbed stream banks.

### **Watering and Irrigation:**

- Avoid overwatering. Only water when plants and grass show signs of moisture stress.
- If it is necessary to water landscaping, drip irrigation techniques should be employed and watering should be conducted in the morning.

### **Mowing Management:**

- Turf grasses should be mowed high and frequently to reduce the insects and weeds. Keep mower blades sharp. Grass can be cut lower in the spring and fall to stimulate root growth, but no shorter than 1 ½ inches.

### **Weed/Pest Management:**

- Try to use manual or mechanical method for weed removal rather than applying herbicides.
- Use non-toxic and less toxic pesticides and pest control methods, whenever possible. Avoid the use of copper-based pesticides.
- Do not mix or prepare pesticides for application near a stormwater drain, drainage ditch or surface water. Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Spot treat only affected areas instead of using widespread pesticide application
- Do not apply pesticides when it is raining or when rain is in the forecast.

### **Fertilizer Application:**

- Determine the proper fertilizer application for the types of soil and vegetation involved. Soils should be tested to determine the correct fertilizer formula and requirements.
- Follow the manufacturers' recommendations and directions for the proper amounts of fertilizer and application instructions.
- Avoid applying fertilizers when it is raining or when rain is in the forecast.
- Fertilizers should be worked into the soil rather than broadcast and left on the surface.
- Sweep up dry fertilizer granules that fall on pavement or other hard surfaces. Do not hose or blow off.

### **Waste Management:**

- Use dry cleanup methods, such as sweeping and bagging, rather than blowing or washing off paved surfaces.
- When possible, recycle grass clippings and leaves by using a mulching mower.

## **Landscaping and Lawn Care and Vegetation Management** **(Continued)**

- Dispose of grass clippings, leaves, sticks, or other collected vegetation by bagging as solid waste for pick up or bring to a composting facility or permitted landfill. If composting on-site, keep waste materials and compost away from stormwater drains and natural drainage ways.
- Always cover waste materials when hauling off-site.

### **Inspection Procedures:**

- Routinely monitor lawns to identify problems during the early stages.
- Identify nutrient/water needs of plants, inspect for problems by testing soils.

### **Maintenance Procedures:**

- Minimize/eliminate fertilizer application.
- Leave grass clippings on lawn, or mulch clippings into lawn.
- Limit water as necessary to supplement rainwater (1 inch/week is adequate).
- Mow with sharpened blades set high (3 inches) – remove only the top 1/3 of the leaves.
- Water plants in the early a.m.

**Measurable Goal:** Establish environmentally responsible maintenance procedures for lawn care.

# Loading and Unloading Operations



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from any outdoor, unloading or transfer liquid or solid materials.

## Part A: Information & Training

**Overview:** Loading and unloading of both liquid and solid materials and products often takes place outdoors on docks from trucks, rail cars, and other transport vehicles. Materials that are spilled, leaked, or lost during transfer have the potential to accumulate and come into contact with rain and stormwater runoff and can contribute oil and greases, nutrients, heavy metals, sediment, toxic chemicals, and abnormal pH to runoff and down streams receiving waters.

**Pollution Control Approach:** Prevent contact with rain and stormwater runoff and employ proper procedures during loading, unloading, and transfer operations.

### Targeted Pollutants:

- Sediment
- Nutrients
- Organic Matter
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Abnormal pH
- Trash and Debris

### BMPs:

- Conduct loading, unloading and other material transfer operations during dry weather or indoors if possible.
- Loading/unloading areas should be covered to reduce exposure of materials to rain.
- Use overhangs or door skirts between trailers and buildings.
- Load and unload only at designated loading areas to limit the areas where spills and leaks can occur.
- For liquid transfer operations, use drip pans under hoses and pipe connections, and when making and breaking connections. Check equipment regularly for leaks, including valves, pumps, flanges and connections.
- Drip pans should be stored in a covered area and must be cleaned periodically. Properly dispose of any collected/dripped materials.

## Loading and Unloading Operations (Continued)

- Contain and immediately clean up any leaks or spills during material transfers. Never hose down the loading/unloading area into stormwater drain or drainage ditch.
- Park transport vehicles and tanker trucks in designated areas where spills and leaks can be contained.

### Loading/Unloading Area Design Features:

- Design loading and unloading areas to prevent contact with rain and stormwater runoff:
  - Cover the loading/unloading area with a roof awning structure.
  - Pave and grade the loading/unloading area.
  - Use berms or curbs to prevent stormwater runoff from adjacent areas from flowing onto the loading/unloading area.
  - Position roof downspouts away from loading/unloading area.
- For liquid materials, the loading and unloading areas should be paved with Portland cement concrete. Special coating may be required for some materials.
- For liquid transfer, the loading area should be designed to prevent liquid spills from entering a stormwater drain, drainage ditch or surface water sloping the area to drain connected to a dead-end sump. Ensure that the secondary containment system is large enough to contain the entire volume of a potential spill.
- Ensure that all stormwater from the site is treated by an appropriate structural or non-structural stormwater control.
- Local fire regulations should be consulted on the clearance of roof covers over flammable materials.

### Inspection Procedures:

- **Ongoing** – Inspect loading/unloading area(s) to check for any materials lost, leaked or spilled during transfer operations. Promptly contain and clean up any leaks or spills
- **Ongoing** – Check liquid transfer equipment regularly for leaks from valves, pumps, flanges and connections.
- **As needed** – Loading/unloading areas, including parking lots and access roads, should be swept and cleaned when needed. Solid materials should be collected and disposed of properly. Do not hose down paved areas.
- **Weekly** – Inspect berms, curbing, and secondary containment systems. Perform repairs as needed.

### Spill Prevention and Response:

- Develop Standard Operating Procedures (SOP) for spill prevention and clean up.
- Store and maintain appropriate spill cleanup materials on site in a location near the loading/unloading area(s).

## Operational By-Products/Waste



**Goal:** Eliminate illegal dumping.

### Part A: Information & Training

**Overview:** Illegal dumping has become an increasingly large problem. The garbage is usually dumped on vacant lots, along utility right-of-way's, on public and private lands, and at other normally unattended locations. Illegal dumps can pollute local waterways and groundwater.

#### Targeted Pollutants:

- Bacteria
- Organic Matter
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris

#### BMPs:

- Post "No Dumping" signs.
- Illuminate area if possible
- Prevent access. Erect barriers.
- Identify the by-product/waste the should be recycled (i.e., paper, cardboard).

#### Inspection Procedures:

- Conduct regularly schedules inspections for maintenance concerns.
- Unscheduled patrolling of areas by police.

#### Maintenance Procedures:

- Clean up and dispose of "illegally dumped" materials, trash/debris in accordance with environmental regulations.
- Cut and remove vegetation.

**Measurable Goal:** Document inspections and any actions taken.

## Pressure Washing and Surface Cleaning



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from outdoor pressure washing and surface cleaning activities.

### Part A: Information & Training

**Overview:** Outdoor pressure washing and surface cleaning activities, such as the cleaning of building facades, rooftops and pavements, can degrade water quality if the washwater is allowed to discharge to the stormwater drainage system or to surface water. The washwater from these activities can be contaminated with detergents and cleaning agents, suspended soils, organic matter, trash, heavy metals, and numerous other pollutants present on the surface being washed.

**Pollution Control Approach:** Prevent contaminated washwater and pollutants from reaching or being discharged to the stormwater drainage system

#### Targeted Pollutants:

- Sediments
- Nutrients
- Bacteria
- Organic Matter
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris

#### BMPs:

- Prior to pressure washing and surface cleaning activities, contact Glenn Engineering to determine the available options for the proper disposal of washwater.
- Identify and cover all nearby stormwater drains with impervious barriers such as berms, plugs or rubber mats, or screens as needed. Ensure stormwater drain covers and the amount of wastewater generated will not flood the area or adversely affect vehicle or pedestrian traffic.
- Create a containment area with temporary curbs, berms, and tarps as needed to keep washwater contained.
- Clean up as much as possible using dry cleaning methods such as sweeping and vacuuming before washing. Use absorbents on small oil spots.
- Consider surface cleaning only using water; when using detergents and cleaning agents, use the least toxic product needed to get the job done.

## **Pressure Washing and Surface Cleaning (Continued)**

- Never dispose of washwater containing soap or other cleaning agents, grease, oils, solids, floatable debris or other pollutants onto pavement, or to a stormwater drain, drainage ditch or surface water. Discharge washwater to a holding tank truck or sanitary sewer in accordance with local wastewater requirements.
- Pressure washing wastewater that contains visible debris or residue, soap, detergent or other cleaning agents, or excessive amounts of any pollutant, may not be left on paved surfaces to evaporate, because that residue will eventually be discharged to the stormwater drain.
- Pressure washing and surface cleaning activities should not be undertaken during rain events or when rain is eminent.
- Minimize water use by using high pressure, low volume nozzles; this reduces the volume of wastewater that needs to be properly disposed.
- Instead of pressure washing and other wet surface cleaning, consider using alternative dry methods.
- Manage and dispose of washwater from pressure washing and surface cleaning appropriately.

| Paved Area? | Using Soap, Detergent or Cleaning Agents | Washwater Management and Disposal Requirements                                                                                                                                                                                                                |
|-------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| YES         | YES                                      | Use a water collection device that enables collection of the washwater and associated solids. A sump pump, wet vacuum or similar device may be used to collect the washwater and loose material. All collected water and solids must be disposed of properly. |
| YES         | NO                                       | A filter fabric catch basin insert or other type of filter media/screening device should be used to trap the particles in the washwater runoff. All filtered solids must be disposed properly.                                                                |
| NO          | YES                                      | Disperse water as sheet flow and allow to infiltrate grass or ground. Do not allow to enter stormwater drainage system or flow to stream or other water body. Ensure this practice does not kill grass or vegetation.                                         |
| NO          | NO                                       | Disperse water as sheet flow and allow to infiltrate grass or ground.                                                                                                                                                                                         |

# Road Salt Storage and Application



**Goal:** Reduce salt applications to the minimum amount necessary to maintain public safety. Prevent salt contaminated runoff from reaching local waterways.

## Part A: Information & Training

### Applicable Activities:

- Deicing Operations
- Loading/Unloading

**Pollution Control Approach:** Consider alternative deicing materials (i.e., calcium chloride, magnesium chloride). Apply deicers on roadways only as needed, using the minimum quantities and lowest applications rate that will be effective. Transfer to storage shed to prevent contact with stormwater runoff.

### Targeted Pollutants:

- Sediments
- Nutrients

### BMPs:

- Require covered facility for salt storage and size properly for seasonal needs.
- Store salt on highest ground elevation to allow for infiltration of stormwater.
- Calibrate salt spreaders for proper application.
- Use a wetting agent with salt to minimize “bouncing” during application.
- Cover salt loading areas, or build storage shed.
- Unload salt deliveries directly into storage facility, or if not possible, move inside immediately.
- Post a copy of the Material Safety Data Sheet (MSDS) and bill of lading for each product and shipment.
- Each vehicle that applies anti-icing or deicing products must maintain a log, with entries by each operator, listing the times of operation, location where each anti-icing or deicing was applied.



## **Road Salt Storage and Application (Continued)**

**Inspection Procedures:** Look for physical evidence of problems:

- Inspect salt storage sheds for leaks, structural problems.
- Inspect salt piles for proper coverage, tarps for leaks or tears.
- Inspect salt application equipment.
- Inspect salt regularly for lumping or water contamination.
- Inspect surface areas for evidence of runoff – salt stains on ground near and around the salt shelter, loading area, or down slope.
- Inspect for excessive amount of salt on roads.

**Maintenance Procedures:**

- Service trucks and calibrate spreaders regularly to ensure accurate, efficient distribution of salt.
- Educate and train operators on hazards of over-salting to roads and environment.
- Repair/replace tarps.

**Measurable Goal:** Document inspections and any actions taken.

# Solid Waste Handling and Transfer



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from the improper storage, handling and transfer of solid wastes.

## Part A: Information & Training

**Overview:** Solid waste management involves the collection, storage, transfer and final disposal of trash, garbage and solid wastes from the City operations. Improper handling, storage, and transfer of solid wastes can contribute trash and floatables, oil and greases, heavy metals, nutrients, suspended solids, toxic chemicals and other pollutants to stormwater runoff and downstream receiving waters.

**Public Control Approach:** Prevent and reduce the discharge of pollutants to stormwater runoff by reducing waste generation and by proper storage, handling and transfer of solid wastes.

### Targeted Pollutants:

- Sediment
- Nutrients
- Bacteria
- Organic Matters
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris

### BMPs:

#### Waste Reduction:

- Reduce waste generation at the site or facility:
  - Maintain usage and waste inventory.
  - Modify processes or equipment to generate less waste.
  - Use substitute materials with less toxic substances.
- Use waste segregation and separation.
- Recycle materials whenever possible

#### Solid Waste Containers and Waste Management Areas:

- Use covered dumpsters and soil waste containers with leak-proof lids and covers. Ensure that dumpster lids and container covers are always closed when not in use.
- Solid waste management areas should be located a minimum of 50 feet away from concentrated flows of stormwater, drainage courses, and stormwater drains, and should not be located in areas prone to flooding and ponding.

## **Solid Waste Handling and Transfer (Continued)**

- Dumpsters and waste containers should be located on paved areas or concrete pads, and covered by overhanging roof structure or canopy when possible.
- Utilize a secondary containment system (such as curbing, berms, liner, or vault) where waste containers touch the ground to prevent contact with stormwater runoff and to contain spills. Smaller waste containers can be raised off the grounds with a pallet or similar method.
- Ensure the dumpster or solid waste container capacity (size and number) is adequate for the waste streams generated by the facility.
- Only appropriate solid wastes should be placed in dumpsters and solid waste containers. Certain wastes such as hazardous waste, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers.
- Do not dump liquid in dumpsters.
- Avoid overfilling a dumpster or solid waste container – arrange for regular waste collection before containers overflow.
- Dumpster and solid waste containers should be kept in good condition without corrosion or leaky seams. Repair or replace if they are deteriorating to the point where leakage is occurring. Consider the use of dumpster and container liners.
- Immediately clean up any leaks or spills from a dumpster or solid waste container. Never hose down the solid waste management area into the stormwater drain or drainage ditch.
- Dispose of rinse and washwater from cleaning of dumpster and solid waste containers to a sanitary sewer drain in accordance with local wastewater requirements. Never discharge the washwater onto pavement, or to a stormwater drain or drainage ditch.
- Keep all solid waste collection and storage areas clean.

### Temporary Waste Piles:

- Cover temporary waste piles with a waterproof cover (made of polyethylene, polypropylene, or equivalent). The cover should be adequately secured.

### Litter:

- Provide a sufficient number of covered receptacles for the facility.
- Empty litter receptacles frequently to prevent spillage.
- Stencil or mark stormwater drains on the facility's property with "DUMP NO WASTE: KEEP IT CLEAN – DRAINS TO STREAM".

### Solid Waste Transfer and Transport:

- Loading and unloading solid wastes can cause leaks and spills during transfer. Operate all equipment to minimize spills and fugitive emission losses (such as dust or mist). Vacuum transfer systems can help minimize waste loss.
- Ensure that vehicles that transport waste have spill prevention equipment such as baffles for liquid wastes, and sealed gates and spill guards for solid waste.

## **Solid Waste Handling and Transfer (Continued)**

**Inspection Procedures:** Look for physical evidence of problems:

- Inspect solid waste management area for leaks or spills
- Inspect dumpsters and solid waste container for proper coverage, tarps for leaks or tears.
- Inspect curbs and berms around dumpster area.

**Measurable Goal:** Establish environmentally responsible maintenance procedures for solid waste handling and transferring.

# Spill Response and Prevention



**Goal:** Limit potential for spills and be prepared for clean-up response.

## Part A: Information & Training

**Overview:** Spills and leaks are major contributors to stormwater pollution and can adversely impact water quality in receiving waters. *Spill prevention* and *spill response* are critical to effective stormwater pollution prevention efforts.

### Applicable Operations and Activities:

- Toxic Chemicals
- Corrosive and reactive materials
- Ignitable and flammable materials
- Primers, paints, finishes and coatings

### BMPs:

- Keep all materials properly stored in closed, labeled containment systems.
- Use secondary containment systems where appropriate
- Keep spill recovery materials available for immediate response to a spill

### Inspection Procedures:

- Inspect secondary containment systems, oil/water separators periodically.
- Inspect containers for leaks.
- Monitor areas near storm inlets and floor drains for indications of spills.

**Maintenance Procedures:** Use reusable spill cleanup material (Sponge mops, oil absorbent pads, etc.).

- Pump out oil water separators as needed.
- Protect drains with oil absorbent materials
- Clean out receivers on regular schedule.
- Remove spilled salt from salt loading area.

**Measurable Goals:** Document inspections and any spill incidents as well as actions taken to clean up.

# Street Cleaning & Maintenance



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from streets, driveways, parking areas, and other impervious surfaces.

## Part A: Information & Training

**Overview:** Streets, roads, highways and other large paved surfaces, such as parking areas, are significant sources of pollutants in stormwater discharges including trash, sediment, organic matter and oil and grease. Regular sweeping and cleaning of roadways and parking areas are effective methods of removing both large and fine particulate pollutants.

**Applicable Operations and Activities:** City public streets, roads and parking areas.

### Targeted Pollutants:

- Sediment
- Nutrients
- Oil and Grease
- Heavy Metals
- Vehicle Fluids
- Organic Matter
- Trash and Debris

### BMPs:

- Street sweep/vacuum at regular intervals, and “as needed”.
- Make sure your sweepers are well maintained and the brooms are changed regularly based on manufacturer recommendations.
- Commit to sweeping in the range of 3-to-7 mph, depending upon specific conditions.

### Road and Street Sweeping:

- Operate all sweeper equipment to get optimal removal of debris and pollutants from the roadway. This includes adjusting sweeper speed, brush alignment and rotation rate, and sweeping pattern.
- Vacuum sweepers are the preferred method of roadway sweeping, as mechanical brush sweeping does not remove fine particulates as effectively.
- Establish the frequency of street and highway sweeping based on vehicular traffic and litter patterns. Conduct highway and street sweeping at optimal frequencies to minimize the buildup of pollutants.
- If stormwater drain blockages and/or high pollutant loadings occur in certain areas, schedule additional sweeping in those areas.
- Schedule sweeping operations immediately after:

## **Street Cleaning & Maintenance (Continued)**

- Special events such as street fairs, art shows, and parades where additional debris is likely to have accumulated.
- Grass cutting and/or vegetation removal on roadway medians and shoulders.
- Street and highway repair projects that involves saw cutting, chip sealing or other operations that might have left wastes or debris on the road surfaces.
- Schedule sweeping operations after leaf collection in the fall and after deicer application in the winter.
- Schedule additional sweeping during new construction projects involving temporary storage of construction materials like dirt, sand and road base along the roadway.
- Ensure that debris from sweeper hoppers is collected and taken to a temporary storage area or directly to a landfill. Any stormwater drain, drainage ditch or surface water. Ensure that any temporary storage areas are protected from contact with stormwater runoff.
- Avoid conducting sweeping operations during wet weather.
- Do no wash down any streets or curbs during sweeping operations. Fine water spray for dust control is acceptable but it should us as little water as possible.
- Consider using street signage or windshield flyer placements advising residents of “No Parking: Street sweeping” days and enforcement for parked vehicles that consistently ignore the no-parking days.

### **Parking Lot Maintenance:**

- Post “No Littering” signs in parking areas.
- Provide an adequate number of covered trash receptacles to discourage littering. Clean out receptacles frequently to prevent spillage.
- Do not allow rooftop drains from adjacent building to discharge directly onto paved surfaces.
- Establish the frequency of parking area cleaning based on usage and litter patterns.
- Sweep the parking area using a vacuum or mechanical sweeper on a regular basis as needed. Vacuum sweepers are preferred as mechanical brush sweeping does not remove fine particulates as effectively. Dispose of debris and dirt at a landfill – never dump into a stormwater drain, drainage ditch or surface water.
- Clean up oil, antifreeze and other vehicle fluid leaks on pavement surfaces using absorbent materials. Properly dispose of used absorbents and cleanup materials.
- When pressure washing of parking areas is necessary, follow the procedures in (Pressure Washing and Surface Cleaning section)
- Have designated personnel conduct inspection of parking areas and stormwater facilities associated with them. Clean out stormwater inlets and catch basins on a regular basis as needed.

## **Street Cleaning & Maintenance (Continued)**

### **Inspection Procedures:**

- **Inspect** – streets, and plan (as needed) for maintenance/repairs.
- **Prioritize** – some streets (i.e., those with high traffic flows, on flat grades or with many trees) may need more frequent cleaning.
- **Daily** – Inspect cleaning equipment/sweepers for leaks.

### **Maintenances Procedures:**

- Spring sweeping/vacuuming – remove salt sand residues.
- Fall sweeping, collection of leaves at appropriate time intervals.
- Dry sweep or vacuum streets during dry weather.
- Maintain equipment – check for/repair fluid leaks.
- Stage road operations and maintenance activity (patching, potholes repair) to reduce spillage of materials. Cover catch basins and manholes during activity.

**Measurable Goals:** Document inspections and any actions taken.



## Storage of Bulk Materials



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from solid bulk materials that are typically stockpiled and stores outdoors.

### **Part A: Information and Training**

**Overview:** Solid bulk materials, including raw or unfinished products and by-products, are often stockpiled and stored outdoors on a temporary or permanent basis in large piles, stacks, or bins. Some examples of these bulk materials include:

- Gravel
- Sand
- Topsoil
- Compost
- Chemicals
- Logs and Treated Wood
- Building Materials
- Concrete
- Metal Products

Rain and stormwater runoff coming into contact with these stored materials can result in erosion and wash off of both suspended and dissolved pollutants. Contaminants may include sediment, nutrients, organic matter, abnormal pH, heavy metals, toxic chemicals and dissolved salts.

**Pollution Control:** Cover and contain bulk materials to prevent erosion and contact with stormwater runoff.

#### **Targeted Pollutants:**

- Sediment
- Nutrients
- Organic Matter
- Heavy Metals
- Abnormal pH
- Soluble Chemicals

#### **BMPs:**

- Always store bulk materials indoors or use storage sheds whenever possible.
- Established permanent outdoor storage areas should be covered with a roof and bermed or enclosed to prevent contact with rain and stormwater runoff. This is particularly important for water-soluble materials and those that can leach pollutants into stormwater or groundwater

## **Storage of Bulk Materials (Continued)**

- Where feasible, a waterproof cover (made of polyethylene, polypropylene, or equivalent) should be used over all materials stored outside. The cover should be adequately secured and remain in place at all times when materials or stockpile is not being used.
- For large stockpiles that cannot or when covering bulk materials is not feasible, containment measures and erosion and sedimentation (E&S) controls should be implemented at the perimeter of the site and at any catch basins as needed to prevent erosion and dispersion of the material to a storm drain or drainage ditch. Bulk materials should not be allowed to wash off the site or discharge into surface waters.
- Locate stockpiles a minimum of 50 feet away from concentrated flows of stormwater, stormwater drains, drainage ditches, and surface waters,
- Consider the use of storm drain covers, filter fabric, silt fences, or secured liners at areas with temporary stockpiles to keep materials from entering the stormwater drainage system. Make sure that nearby stormwater drains are clearly marked.
- Protect all temporary stockpiles from contact with stormwater runoff from surrounding areas using sediment barriers such as berms, dikes, fiber rolls, silk fences, or sandbags.
- Store small amounts of bulk materials and any bagged materials on pallets to avoid contact with stormwater runoff.
- Keep all outdoor storage containers and bins in good condition. Repair or replace any deteriorating storage containers and bins.
- Minimize the amount of materials purchases or keep on site to reduce storage needs and prevent large stockpiles.

### **Storage Area Design Features:**

- Consider sloping paved areas to minimize the pooling of water on the site. Minimizing water pooling is particularly important with materials that may leach pollutants. A minimum slop of 1.5% is recommended.
- Use curbing around the perimeter of stockpiles or storage area to both prevent contact with uncontaminated stormwater runoff from adjacent areas and contain runoff from stockpiles. The area inside the curb should slop to a drain which is connected to a stormwater structural control that provides water quality treatment.
- Ensure that all stormwater from the site is treated by an appropriate structural or non-structural stormwater control.

### **Inspection and Prevention Maintenance Requirements:**

- **Daily** – Inspect the storage area to check for erosion and/or leaching from stockpiles of raw materials.
- **As Needed** – Storage area should be swept and cleaned when needed. Solid materials should be collected and disposed of properly. Do not hose down paved areas.
- **Weekly** – Inspect berms, curbing, and secondary containment. Perform repairs as needed.

## Tool, Parts, and Equipment Cleaning



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from cleaning of tools, parts, or smaller power equipment.

### **Part A: Information and Training**

**Overview:** The cleaning of tools, parts and smaller power equipment can often contaminate stormwater runoff when inappropriate methods of cleaning are used and washwater is not managed properly. Pollutants can include detergents and cleaning agents, hydrocarbons and other toxic organic compounds, oils and greases, nutrients, heavy metals, abnormal pH, and suspended solids.

**Applicable Operations and Activities:** City's maintenance personnel may have occasion to wash tools, parts or smaller power equipment outdoors.

**Pollution Control Approach:** Provide appropriate facilities and employ proper techniques for the cleaning of tools, parts, and equipment to prevent contaminated washwater and pollutants from reaching the stormwater drainage system.

#### **Targeted Pollutants:**

- Sediment
- Nutrients
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Abnormal pH
- Trash and Debris
- Detergents and Cleaning Agents

#### **BMPs:**

- Tool, parts and equipment washwater is considered process water and must be discharged into a sanitary sewer, holding tank or process treatment system, regardless of the washing method used.
- Designated wash area should be well marked with signs indicating where and how washing must be done.
- Use the least toxic detergents, cleaning agents or solvents to get a job done.
- Minimize use of solvents. Clean using manual methods or steam cleaning when possible, or use water-based solvents. Use a wire brush or bake oven for small tools and parts cleaning. Use non-caustic methods instead of caustic agents whenever possible.

## **Tool, Parts, and Equipment Cleaning (Continued)**

- Use self-contained sinks and tanks when cleaning with solvents. Do all liquid cleaning at a centralized area so solvents and residues stay in one area.
- Consider recycling washwater with a closed loop system or use self-contained washers. Numerous products are commercially available that recycle and contain washwater and cleaning solvents.
- Collect all washwater from tool and equipment washing operations and discharge to a sanitary sewer, holding tank, or process treatment system. Recycle or pretreat washwater effluent prior to discharge to sanitary sewer as required by the ALCOSAN Rules and Regulations.
- Never discharge any washwater directly to a stormwater drain, drainage ditch or surface water.

**Inspection Procedures:** Check to make sure all washwater sumps and berms do not leak, upon completion of cleaning activity.

### **Maintenance Procedures:**

- Recycle washwater with close loop system or use self-contained washers.
- Discharge all washwater to a sanitary sewer.

**Measurable Goal:** Document inspections and any actions taken.

# Vehicle/Equipment Maintenance



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from vehicle and equipment maintenance activities areas.

## **Part A: Information and Training**

**Overview:** Vehicle and heavy and light equipment repair and maintenance activities are potentially significant sources of stormwater pollution, due to the use of harmful materials and waste involved. Engine repair and service, brake and transmission work, parts cleaning, replacement of vehicle fluids, and outdoor vehicle and equipment storage can all contribute a number of contaminants to stormwater runoff such as hydrocarbons (motor oil, gasoline, diesel fuel and grease), heavy metals (such as lead, copper, and zinc), antifreeze, solvents and other toxic chemicals.

**Pollution Control Approach:** Implement procedures during repair and maintenance, vehicle storage, waste handling and cleaning activities to prevent contaminants from entering the stormwater drainage system.

### **Applicable Operations and Activities:**

- Maintenance Building

### **Targeted Pollutants:**

- Sediments
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris
- Vehicle Fluids

### **BMPs:**

#### **Repair and Maintenance Activities:**

- Conduct maintenance work indoors. If work must be performed outside, guard against spillage of materials that could discharge to storm sewers.
- Any outdoor maintenance and repair activities at a stationary facility should be done in a designated vehicle maintenance area covered with a roof and bermed or enclosed to prevent with rain and stormwater
- For temporarily or mobile repairs or maintenance work being done outdoors, always use a tarp or ground cloth, and drop pans beneath the vehicle or equipment to capture spills and drips.

## **Vehicle/Equipment Maintenance (Continued)**

- Designate a special area to drain and replace motor oil, coolant, and other vehicle fluids where drips and spills can be easily cleaned up. The designated area should have no connections to a stormwater drain or sanitary sewer.
- Avoid changing motor oil or vehicle fluids, or performing equipment maintenance near a stormwater drain, drainage ditch, surface water or anywhere where contaminants could come into contact with rain or stormwater runoff.
- Always use a funnel when pouring fluids, and use a drop pan under a vehicle when unclipping hoses, unscrewing filters and removing other parts that might leak to keep splatters and drips off the shop floor.
- Check all incoming vehicles for oil and other vehicle fluid leaks. Use a drip pan underneath leaking vehicles and equipment.
- Initiate single purpose use of vehicle bays – dedicate one (or more) bays that have no (or sealed) floor drains for repairs/maintenance.
- Clean spilled materials immediately using “dry” methods.
- Never leave vehicles unattended while refueling.

### **Vehicle and Equipment Storage:**

- Inspect vehicles and equipment for leaks on a regular basis, particularly those parked or stored long term. Use a drop pan underneath leaking vehicles and equipment.
- Store batteries upright in a contained and covered place indoors. Do not store batteries outside on the ground. Check to ensure batteries are not damaged or leaking. Keep battery acid-neutralizing materials, such as baking soda, available near the storage area.

### **Material and Waste Handling:**

- Do not pour liquid waste to sinks or storm drains
- Identify appropriate recycling/disposal options for waste.
- Recycle greases, used oil and oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, and transmission fluids. Collect and store these recyclable materials separately and contract with a recycling service for pickup.
- Promptly transfer used fluids to proper waste or recycling drums. Avoid leaving full drip pans or other open containers sitting out for extended periods of time.

### **Cleaning Activities:**

- Keep work area, tools and equipment clean and orderly. Ensure that oil and grease accumulated do no buildup.
- For larger spills, apply absorbent materials such as absorbent granules, socks and pads. Absorbents should be cleaned up promptly, bagged and placed in the trash.
- Sweep or damp mop for regular cleaning of work areas.
- Avoid hosing down work areas and parking lots. If the area is pressure-washed, washwater could be collected and/or directed to a sanitary sewer. Never direct washwater to a stormwater drain, drainage ditch, or surface water.

## **Vehicle/Equipment Maintenance (Continued)**

- Post signs over sinks to remind employees not to pour wastes down sink drains.
- Switch to use of non-toxic chemicals for maintenance and cleaning when possible.

### **Inspection Procedures:**

- Inspect (for maintenance purposes) floor drain systems, oil/water separators.
- Monitor “parked” vehicles/equipment for leaks.

### **Maintenance Procedures:**

- Maintain a clean work area – remove contaminants from floors, drains, catch basins, using “dry” methods.
- Use non-hazardous cleaners. Use non-chlorinated solvents instead of chlorinated solvents.
- Repair or replace any leaking containers.
- Use steam cleaning/pressure washing instead of solvent for parts cleaning.
- Store waste fluids in properly capped, labeled storage containers.
- Store batteries in leak proof, compatible (i.e., non-reactive) containers.
- Rinse grass from lawn care equipment on permeable (grassed) areas.
- Protect against pollution if outside maintenance is necessary (cover storm receiver, use secondary containment vessels, etc.).

**Measurable Goal:** Document Maintenance site inspections and spill responses.

## Vehicle/Equipment Washing



**Goal:** Prevent or reduce the risk of discharge of pollutants to stormwater from vehicle and equipment washing and cleaning activities.

### **Part A: Information and Training**

**Overview:** Washing and cleaning of vehicle exteriors and engine compartments is a common activity for City's vehicle fleets. Washwater from vehicle cleaning and detailing activities can contaminate stormwater and receiving waters with toxic hydrocarbons, oils and grease, detergents and detailing chemicals, nutrients, heavy metals and suspended solids.

**Pollution Control Approach:** Prevent the release of vehicle and equipment washwater and associated pollutants to the stormwater drainage system.

#### **Applicable Operations and Activities:**

- Maintenance Building
- City's vehicle fleet.

#### **Targeted Pollutants:**

- Sediments
- Nutrients
- Oil and Grease
- Heavy Metals
- Toxic Chemicals
- Trash and Debris
- Detergents and Agents

#### **BMPs:**

##### **For all vehicles washing and cleaning:**

- Initiate single purpose use of vehicle bays – dedicate only one bay for washing.
- Perform cleaning with pressurized cold water, without the use of soaps, if waste water will flow to a storm sewer system.
- Never allow washwater or cleaning agents (including detailing products) to flow into a stormwater drain, drainage ditch or surface water.
- Use minimal amounts of biodegradable soaps only if wastewater will discharge to a sanitary sewer system.



## **Vehicle/Equipment Washing (Continued)**

- Rinse with hoses that are equipped with automatic shutoff devices and spray nozzles.
- Steam clean (without soap) where wastes can be captured for proper disposal (i.e., oil-water separator).

### **For fleet or permanent facilities:**

- Designate a paved vehicle area. Designated area should be well marked, and bermed and graded to capture washwater and direct it to a sump line connected to a sanitary sewer, a holding tank or treatment/recycling system.
- Do not conduct oil changes or other maintenance activities in the designated washing area. These activities should be conducted in an area specifically designated for vehicle maintenance.
- For smaller fleets and operations, consider the use of properly maintained off-site commercial car wash and cleaning facilities.

**Inspection procedures:** Identify the need for cleaning of catch basins, oil/water separators.

### **Maintenance Procedures:**

- Perform steam cleaning or pressure washing where it can be captured for proper disposal.
- Take precautions against excess use of/spillage of detergents.

**Measurable Goals:** Document inspections and any actions taken.