

## APPENDIX **G**

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### SOURCE CONTROL MEASURES

## Appendix G: Source Control Mitigation Measures

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## Source Control Measures

### S-1: Storm Drain Message and Signage

#### **Purpose**

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. This Fact Sheet contains details on the installation of storm drain messages at storm drain inlets located in new or redeveloped commercial, industrial, and residential sites.

#### **Design Criteria**

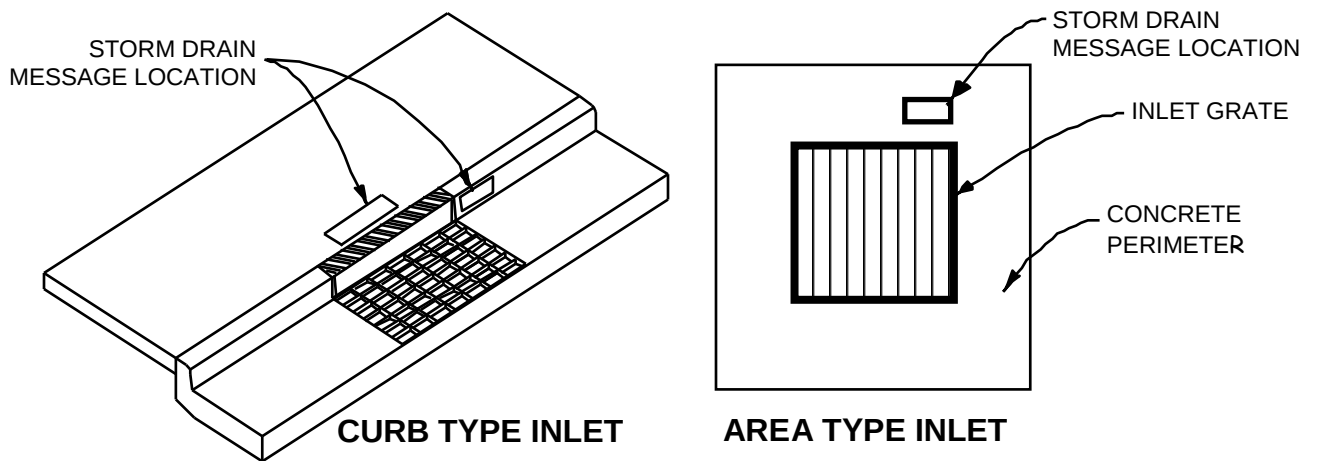
Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal into the storm drain system. The signs are typically stenciled or affixed near the storm drain inlet. The message simply informs the public that dumping of wastes into storm drain inlets is prohibited and/or the drain discharges to a receiving water.

Storm drain message markers or placards are required at all storm drain inlets within the boundary of the development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side (see figures below). All storm drain inlet locations must be identified on the development site map.

Signs with language and/or graphical icons, which prohibit illegal dumping, shall be posted at designated public access points along channels and streams within a project area. Consult plan checking staff to determine specific signage requirements.

#### **Maintenance Requirements**

Legibility of markers and signs shall be maintained.



#### **NOTES:**

1. USE PROHIBITIVE LANGUAGE SUCH AS "NO DUMPING – DRAINS TO OCEAN"
2. STORM DRAIN MESSAGE SHALL BE APPLIED IN SUCH A WAY AS TO PROVIDE A CLEAR, LEGIBLE IMAGE
3. STORM DRAIN MESSAGE SHALL BE PERMANENTLY APPLIED DURING THE CONSTRUCTION OF THE CURB AND GUTTER USING A METHOD APPROVED BY THE CITY OF LOS ANGELES

## S-2: Outdoor Material Storage Area Design

### ***Purpose***

Materials that are stored outdoors could become sources of pollutants in stormwater runoff if not handled or stored properly. Materials could be in the form of raw products, by-products, finished products, and waste products. The type of pollutants associated with the materials will vary depending on the type of commercial or industrial activity.

Some materials are more of a concern than others. Toxic and hazardous materials must be prevented from coming in contact with stormwater. Non-toxic or non-hazardous materials do not have to be prevented from stormwater contact, but cannot be allowed to runoff with the stormwater. These materials may have toxic effects on receiving waters. Accumulated material on an impervious surface could result in significant debris and sediment being discharged with stormwater runoff causing a significant impact on the rivers or streams that receive the runoff.

Materials may be stored in a variety of ways, including bulk piles, containers, shelving, stacking, and tanks. Stormwater contamination may be prevented by eliminating the possibility of stormwater contact with the material storage areas either through diversion, cover, or capture of the stormwater. Control measures may also include minimizing the storage area. Control measures are site-specific, and must meet local permitting requirements.

### ***Design Criteria***

Design requirements for material storage areas are governed by Building and Fire Codes, and by current City or County ordinances and zoning requirements. Source Control Measures described in the Fact Sheet are intended to enhance and be consistent with these code and ordinance requirements. The following design features should be incorporated into the design of material storage area when storing materials outside that will contribute significant pollutants to the storm drain.

| Source Control Design Feature | Design Criteria                                                                                                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surfacing                     | <ul style="list-style-type: none"><li>Construct the storage area base with a material impervious to leaks and spills.</li></ul>                                                                                                                                                                         |
| Covers                        | <ul style="list-style-type: none"><li>Install a cover that extends beyond the storage area, or use a manufactured storage shed for small containers.</li></ul>                                                                                                                                          |
| Grading/Containment           | <ul style="list-style-type: none"><li>Minimize the storage area.</li><li>Slope the storage area towards a dead-end sump to contain spills.</li><li>Grade or berm storage areas to prevent run-on from surrounding areas.</li><li>Direct runoff from downspouts/roofs away from storage areas.</li></ul> |

### ***Accumulated Stormwater and Non-stormwater***

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

## S-3: Outdoor Trash Storage Area Design

### ***Purpose***

Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by the forces of water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles. This Fact Sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling.

### ***Design Criteria***

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current City of Los Angeles ordinances and zoning requirements. The design criteria described in the Fact Sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulations.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria listed below are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection area to obtain established and accepted guidelines for designing trash collection areas. Conflicts or issues should be discussed with plan checking staff.

The following trash storage area design controls were developed to enhance the local permitting codes and ordinances and should be implemented depending on the type of waste and the type of containment:

| Source Control Design Feature | Design Criteria                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surfacing                     | <ul style="list-style-type: none"><li>Construct the storage area base with a material impervious to leaks and spills.</li></ul>                                                                                                                                                                                                                           |
| Screens/Covers                | <ul style="list-style-type: none"><li>Install a screen or wall around trash storage area to prevent off-site transport of loose trash.</li><li>Use lined bins or dumpsters to reduce leaking of liquid wastes.</li><li>Use water-proof lids on bins/dumpsters or provide a roof to cover enclosure to prevent rainfall from entering containers</li></ul> |
| Grading/Contouring            | <ul style="list-style-type: none"><li>Berm or grade the waste handling area to prevent run-on of stormwater.</li><li>Do not locate storm drains in immediate vicinity of the trash storage area.</li></ul>                                                                                                                                                |
| Signs                         | <ul style="list-style-type: none"><li>Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.</li></ul>                                                                                                                                                                                                   |

### ***Maintenance Requirements***

The integrity of structural elements that are subject to damage (e.g. screens, covers and signs) must be maintained by the owner/operator.

## S-4: Outdoor Loading/Unloading Dock Area Design

### ***Purpose***

Materials spilled, leaked, or lost during loading or unloading may collect on impervious surfaces or in the soil and be carried away by runoff or when the area is cleaned. Also, rainfall may wash pollutants from machinery used to load or unload materials. Depressed loading docks (truck wells) are contained areas that can accumulate stormwater runoff. Discharge of spills or contaminated stormwater to the storm drain system is prohibited. This Fact Sheet contains details on specific measures recommended to prevent or reduce pollutants in stormwater runoff from outdoor loading or unloading areas.

### ***Design Criteria***

Design requirements for outdoor loading/unloading of materials are governed by Building and Fire Codes, and by current City of Los Angeles ordinances and zoning requirements. Source Control Measures described in the Fact Sheet are meant to enhance and be consistent with these code and ordinance requirements. Companies may have their own design or access requirements for loading docks. The design criteria listed below are not intended to be in conflict with requirements established by individual companies. Conflicts or issues should be discussed with the plan checking staff.

The following design criteria should be followed when developing construction plans for material loading/unloading areas:

| Source Control Design Feature | Design Criteria                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surfacing                     | <ul style="list-style-type: none"><li>Construct floor surfaces with material that is compatible with materials being handled in the loading/unloading area.</li></ul>                                                                                                                                                                                     |
| Covers                        | <ul style="list-style-type: none"><li>Cover loading/unloading areas to a distance of at least 3 feet beyond the loading dock or install a seal or door skirt to be used for all material transfers between the trailer and the building.</li></ul>                                                                                                        |
| Grading/Contouring            | <ul style="list-style-type: none"><li>Grade or berm storage areas to prevent run-on from surrounding areas.</li><li>Direct runoff from downspouts/roofs away from loading areas.</li></ul>                                                                                                                                                                |
| Emergency Storm Drain Seal    | <ul style="list-style-type: none"><li>Do not locate storm drains in the loading dock area. Direct connections to storm drains from depressed loading docks are prohibited.</li><li>Provide means, such as isolation valves, drain plugs, or drain covers, to prevent spills or contaminated stormwater from entering the storm drainage system.</li></ul> |

### ***Accumulated Stormwater and Non-stormwater***

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces, such as depressed loading docks. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

## S-5: Outdoor Repair/Maintenance Bay Design

### ***Purpose***

Activities that can contaminate stormwater include engine repair, service and parking (leaking engines or parts). Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can severely impact storm water if allowed to come into contact with storm water runoff. This Fact Sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff from vehicle and equipment maintenance and repair areas.

### ***Design Criteria***

Design requirements for vehicle maintenance and repair areas are governed by Building and Fire Codes, and by current City of Los Angeles ordinances, and zoning requirements. The design criteria described in the Fact Sheet are meant to enhance and be consistent with these code requirements.

The following design criteria are required for vehicle and equipment maintenance, and repair. All wash water, hazardous and toxic wastes must be prevented from entering the storm drainage system.

| Source Control Design Feature | Design Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surfacing                     | <ul style="list-style-type: none"><li>Construct the vehicle maintenance/repair floor area with Portland cement concrete.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Covers                        | <ul style="list-style-type: none"><li>Cover or berm areas where vehicle parts with fluids are stored.</li><li>Cover or enclose all vehicle maintenance/repair areas.</li></ul>                                                                                                                                                                                                                                                                                                                                                                     |
| Grading/<br>Contouring        | <ul style="list-style-type: none"><li>Berm or grade the maintenance/repair area to prevent run-on and runoff of stormwater or runoff of spills.</li><li>Direct runoff from downspouts/roofs away from maintenance/repair areas.</li><li>Grade the maintenance/repair area to drain to a dead-end sump for collection of all wash water, leaks and spills. Direct connection of maintenance/repair area to storm drain system is prohibited.</li><li>Do not locate storm drains in the immediate vicinity of the maintenance/repair area.</li></ul> |
| Emergency Storm Drain Seal    | <ul style="list-style-type: none"><li>Provide means, such as isolation valves, drain plugs, or drain covers, to prevent spills or contaminated stormwater from entering the storm drainage system.</li></ul>                                                                                                                                                                                                                                                                                                                                       |

### ***Accumulated Stormwater and Non-stormwater***

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

## S-6: Outdoor Vehicle/Equipment/Accessory Washing Area Design

### ***Purpose***

Washing vehicles and equipment in areas where wash water flows onto the ground can pollute storm water. Wash waters are not allowed in the storm drain system; they can contain high concentrations of oil and grease, solvents, phosphates and high suspended solids loads. Sources of washing contamination include outside vehicle/equipment cleaning or wash water discharge to the ground. This Fact Sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff from vehicle and equipment washing areas.

### ***Design Criteria***

Design requirements for vehicle maintenance and repair areas are governed by Building and Fire Codes, and by current City of Los Angeles ordinances, and zoning requirements. The design criteria described in the Fact Sheet are meant to enhance and be consistent with these code requirements.

The following design criteria are required for vehicle and equipment washing areas. All hazardous and toxic wastes must be prevented from entering the storm drain system.

| Source Control<br>Design Feature | Design Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surfacing                        | <ul style="list-style-type: none"><li>Construct the vehicle/equipment wash area floors with Portland cement concrete.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Covers                           | <ul style="list-style-type: none"><li>Provide a cover that extends over the entire wash area.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Grading/<br>Contouring           | <ul style="list-style-type: none"><li>Berm or grade the maintenance/repair area to prevent run-on and runoff of stormwater or runoff of spills.</li><li>Grade or berm the wash area to contain the wash water within the covered area and direct the wash water to treatment and recycle or pretreatment and proper connection to the sanitary sewer system. Obtain approval from the Industrial Waste Management Division before discharging to the sanitary sewer.</li><li>Direct runoff from downspouts/roofs away from wash areas.</li><li>Do not locate storm drains in the immediate vicinity of the wash area.</li></ul> |
| Emergency Storm<br>Drain Seal    | <ul style="list-style-type: none"><li>Provide means, such as isolation valves, drain plugs, or drain covers, to prevent spills or contaminated stormwater from entering the storm drainage system.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                    |

### ***Accumulated Stormwater and Non-stormwater***

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.

## S-7: Fueling Area Design

### **Purpose**

Spills at vehicle and equipment fueling areas can be a significant source of pollution because fuels contain toxic materials and heavy metals that are not easily removed by storm water treatment devices. When storm water mixes with fuel spilled or leaked onto the ground, it becomes polluted by petroleum based materials that are harmful to humans, fish and wildlife. This could occur at large industrial sites or at small commercial sites such as gas stations and convenience stores. This Fact Sheet contains details on specific measures required to prevent or reduce pollutants in stormwater runoff from vehicle and equipment fueling areas, including retail gas stations.

### **Design Criteria**

Design requirements for fueling areas are governed by Building and Fire Codes and by current City of Los Angeles ordinances and zoning requirements. The design requirements described in this Fact Sheet are meant to enhance and be consistent with these code and ordinance requirements.

| Source Control Design Feature | Design Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surfacing                     | <ul style="list-style-type: none"><li>Fuel dispensing areas must be paved with Portland cement concrete. The fuel dispensing area is defined as extending 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assemble may be operated plus 1 foot, whichever is less. The paving around the fuel dispensing area may exceed the minimum dimensions of the "fuel dispensing area" stated above.</li><li>Use asphalt sealant to protect asphalt paved areas surrounding the fueling area.</li></ul> |
| Covers                        | <ul style="list-style-type: none"><li>The fuel dispensing area must be covered<sup>1</sup>, and the cover's minimum dimensions must be equal to or greater than the area within the grade break or the fuel dispensing area, as defined above. The cover must not drain onto the fuel dispensing area.</li></ul>                                                                                                                                                                                                                          |
| Grading/<br>Contouring        | <ul style="list-style-type: none"><li>The fuel dispensing area shall have a 2% to 4% slope to prevent ponding and must be separated from the rest of the site by a grade break that prevents run-on of stormwater to the extent practicable.</li><li>Grade the fueling area to drain toward a dead-end sump.</li><li>Direct runoff from downspouts/roofs away from fueling areas.</li><li>Do not locate storm drains in the immediate vicinity of the fueling area.</li></ul>                                                             |
| Emergency Storm Drain Seal    | <ul style="list-style-type: none"><li>Provide means, such as isolation valves, drain plugs, or drain covers, to prevent spills or contaminated stormwater from entering the storm drainage system.</li></ul>                                                                                                                                                                                                                                                                                                                              |

1. If fueling large equipment or vehicles that would prohibit the use of covers or roofs, the fueling island should be designed to sufficiently accommodate the larger vehicles and equipment and to prevent run-on and run-off of stormwater. Grade to direct stormwater to a dead-end sump.

### **Accumulated Stormwater and Non-stormwater**

Stormwater and non-stormwater will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and cannot be discharged directly to the storm drain or sanitary sewer system without the appropriate permit.