

LANDSCAPE MAINTENANCE

Best Management Practices (BMPs)

A BMP is a technique, measure or structural control that is used for a given set of conditions to improve the quality of the stormwater runoff in a cost effective manner¹. The minimum required BMPs for this activity are outlined in the box to the right. Implementation of pollution prevention/good housekeeping measures may reduce or eliminate the need to implement other more costly or complicated procedures. Proper employee training is key to the success of BMP implementation.

The BMPs outlined in this fact sheet target the following pollutants:

Targeted Constituents	
Sediment	x
Nutrients	x
Floatable Materials	x
Metals	
Bacteria	x
Oil & Grease	
Organics & Toxicants	
Pesticides	x
Oxygen Demanding	x

MINIMUM BEST MANAGEMENT PRACTICES

Pollution Prevention/Good Housekeeping

- Properly store and dispose of gardening wastes.
- Use mulch or other erosion control measures on exposed soils.
- Properly manage irrigation and runoff.
- Properly store and dispose of chemicals.
- Properly manage pesticide and herbicide use.
- Properly manage fertilizer use.

Stencil storm drains

Training

- Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.
- Provide on-going employee training in pollution prevention.

Provided below are specific procedures associated with each of the minimum BMPs along with procedures for additional BMPs that should be considered if this activity takes place at a facility located near a sensitive waterbody. In order to meet the requirements for medium and high priority facilities, the owners/operators must select, install and maintain appropriate BMPs on site. Since the selection of the appropriate BMPs is a site-specific process, the types and numbers of additional BMPs will vary for each facility.

1. **Take steps to reduce landscape maintenance requirements.**
 - Where feasible, retain and/or plant native vegetation with features that are determined to be beneficial. Native vegetation usually requires less maintenance than planting new vegetation.
 - When planting or replanting consider using low water use flowers, trees, shrubs, and groundcovers.
 - Consider alternative landscaping techniques such as naturoscaping and xeriscaping.
2. **Properly store and dispose of gardening wastes.**
 - Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage at a permitted landfill or by composting.
 - Do not dispose of gardening wastes in streets, waterways, or storm drainage systems.
 - Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm and/or cover.
3. **Use mulch or other erosion control measures on exposed soils.**

¹ EPA " Preliminary Data Summary of Urban Stormwater Best Management Practices"

4. **Properly manage irrigation and runoff.**
 - Irrigate slowly or pulse irrigate so the infiltration rate of the soil is not exceeded.
 - Inspect irrigation system regularly for leaks and to ensure that excessive runoff is not occurring.
 - If re-claimed water is used for irrigation, ensure that there is no runoff from the landscaped area(s).
 - If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
 - Use automatic timers to minimize runoff.
 - Use popup sprinkler heads in areas with a lot of activity or where pipes may be broken. Consider the use of mechanisms that reduce water flow to broken sprinkler heads.
5. **Properly store and dispose of chemicals.**
 - Implement storage requirements for pesticide products with guidance from the local fire department and/or County Agricultural Commissioner.
 - Provide secondary containment for chemical storage.
 - Dispose of empty containers according to the instructions on the container label.
 - Triple rinse containers and use rinse water as product.
6. **Properly manage pesticide and herbicide use.**
 - Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of pesticides and herbicides and training of applicators and pest control advisors.
 - Follow manufacturers' recommendations and label directions.
 - Use pesticides only if there is an actual pest problem (not on a regular preventative schedule). When applicable use less toxic pesticides that will do the job. Avoid use of copper-based pesticides if possible. Use the minimum amount of chemicals needed for the job.
 - Do not apply pesticides if rain is expected or if wind speeds are above 5 mph.
 - Do not mix or prepare pesticides for application near storm drains. Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the targeted pest.
 - Whenever possible, use mechanical methods of vegetation removal rather than applying herbicides. Use hand weeding where practical.
 - Do not apply any chemicals directly to surface waters, unless the application is approved and permitted by the state. Do not spray pesticides within 100 feet of open waters.
 - Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
 - When conducting mechanical or manual weed control, avoid loosening the soil, which could lead to erosion.
 - Purchase only the amount of pesticide that you can reasonably use in a given time period.
 - Careful soil mixing and layering techniques using a topsoil mix or composted organic material can be used as an effective measure to reduce herbicide use and watering.
7. **Properly manage fertilizer use.**
 - Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers.
 - Follow manufacturers' recommendations and label directions.
 - Employ techniques to minimize off-target application (e.g. spray drift) of fertilizer, including consideration of alternative application techniques. Calibrate fertilizer distributors to avoid excessive application.
 - Periodically test soils for determining proper fertilizer use.
 - Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
 - Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
 - Use slow release fertilizers whenever possible to minimize leaching

8. **Incorporate the following integrated pest management techniques where appropriate:**
- Mulching can be used to prevent weeds where turf is absent.
 - Remove insects by hand and place in soapy water or vegetable oil. Alternatively, remove insects with water or vacuum them off the plants.
 - Use species-specific traps (e.g. pheromone-based traps or colored sticky cards).
 - Sprinkle the ground surface with abrasive diatomaceous earth to prevent infestations by soft-bodied insects and slugs. Slugs also can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
 - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
 - Small mammals and birds can be excluded using fences, netting, and tree trunk guards.
 - Promote beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seedhead weevils, and spiders that prey on detrimental pest species.

Training

1. **Train employees on these BMPs, storm water discharge prohibitions, and wastewater discharge requirements.**
2. **Educate and train employees on the use of pesticides and pesticide application techniques. Only employees properly trained to use pesticides can apply them.**
3. **Train and encourage employees to use integrated pest management techniques.**
4. **Train employees on proper spill containment and cleanup.**
 - Establish training that provides employees with the proper tools and knowledge to immediately begin cleaning up a spill.
 - Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
 - BMP IC17 discusses Spill Prevention and Control in detail.
5. **Establish a regular training schedule, train all new employees, and conduct annual refresher training.**
6. **Use a training log or similar method to document training.**

Stencil storm drains

Storm drain system signs act as highly visible source controls that are typically stenciled directly adjacent to storm drain inlets. Stencils should read "No Dumping Drains to Ocean".

References

California Storm Water Best Management Practice Handbook. Industrial and Commercial. 2003.
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California Storm Water Best Management Practice Handbooks. Industrial/Commercial Best Management Practice Handbook. Prepared by Camp Dresser & McKee, Larry Walker Associates, Uribe and Associates, Resources Planning Associates for Stormwater Quality Task Force. March 1993.

Water Quality Handbook for Nurseries. Oklahoma Cooperative Extension Service. Division of Agricultural Sciences and Natural Resources. Oklahoma State University. E-951. September 1999.

For additional information contact:

City of Lake Forest
Public Works Department
25550 Commercentre Drive, Suite 100
Lake Forest, CA 92630
(949) 461-3480

<http://www.lakeforestca.gov>