

INTRODUCTION

The City of Encinitas Storm Water Pollution Control Manual has been put together to comply with the requirements of the Federal Clean Water Act-National Pollutant Discharge Elimination System Program (NPDES) and the San Diego County NPDES Permit No. 2001-01. The intent of these programs is to maintain and improve the quality and beneficial uses of our water resources. The widespread implementation of best management practices is regarded as one of the best solutions to achieving this goal. This manual provides detailed information on ways to implement best management practices in the City of Encinitas.

OVERVIEW

The City of Encinitas water resources-it's ocean, lagoons, wetlands, and creeks play an important role in the quality of life we enjoy. They provide us with recreation, support tourism, provide habitat to numerous species and provide open space enjoyment. These waters, however, are vulnerable to pollution from a number of human activities.

Many of our water pollution problems are due in large part to pollutants that are washed off from land by storms. Many people believe that storm water is "clean" and does not harm water quality. This perception is understandable since the amount of pollution from any one spot is not usually significant by itself. But when all these small amounts combine, they can cause big water quality problems downstream.

This manual applies to construction, commercial, industrial, municipal and construction activities that have the potential to contribute pollutants to runoff or directly to receiving waters. Storm water runoff may seep into the ground, drain into a storm drain, flow across parking lots but either way it eventually ends up in a creek, lagoon or ocean.

Contaminated storm water can negatively affect every water body it enters. Therefore, this manual provides detailed information on what we are all required to do to reduce the contamination of urban runoff (dry-weather) and storm water runoff (wet-weather) from our properties.

BACKGROUND

Storm Water Runoff

In open space areas rain water seeps into the ground. However, when rain falls on paved and other hard surfaces it runs off and is conveyed through the storm drain system directly to our creeks, lagoons and ocean. Storm water runoff although starting as rain, collects pollutants when it hits the ground and travels. For instance, runoff from parking lots picks up oil and grease dripped from cars, asbestos from worn brake linings and zinc from tires. Pesticides, herbicides, and fertilizers are washed off from landscaped areas, and soils are washed away from construction sites. Any substance found on the ground can wind up in storm water runoff.

Storm Drains Lead to Creeks, Lagoons and the Pacific Ocean

Storm drainage systems are designed to decrease the chance of flooding. The rainwater that used to seep into vegetated areas now must be collected and carried elsewhere. The storm drain system collects this storm water runoff and carries it to the nearest creek, lagoon and then the Pacific Ocean. The storm drain system is meant to only carry rainwater. By allowing oil,

antifreeze, detergents and other material to enter the storm drain system is the same as dumping directly into the creek, lagoon and ocean.

Storm Drains vs. Sewer Lines

In Southern California the storm drain system is separate from the sewer system. All gutters, parking lots and paved surfaces eventually transport pollutants to the waterways and Pacific Ocean. Therefore any litter, gas, fertilizers or sediment left on the surface of the ground will end up on the beach after a storm event. The sewer system is a closed system that directly transports waste from each household to the wastewater treatment plant.

Best Management Practices

Best Management Practices (BMPs) are defined as any program, technology, process, siting criteria, operating method, measure or device which controls prevents, removes, or reduces pollution. For instance;

- Source Control BMPs – are operational practices that prevent pollution by reducing potential pollutants at the source. They typically do not require maintenance or construction.
- Treatment Control BMPs – are methods of treatment to remove pollutants from storm water.

Sources of Pollutants

Many people know that it is illegal to dump toxic chemicals down a storm drain. But you are also polluting if you allow pollutants to be washed into a storm drain with storm water runoff or with wash water. For instance, you may be polluting if you:

- Allow wash water from engine or equipment washing to enter a storm drain
- Spill antifreeze or other material on your site without cleaning it up
- Clear land without taking steps to prevent erosion
- Allow pet waste to enter the storm drain system
- Hose off sidewalks and parking lots
- Clean the kitchens of restaurants into the storm drain system

Virtually anything on the ground surface can become a water pollutant.

Pollutants

Any substance that can render water harmful to people, fish, or wildlife or impair recreation or other beneficial uses of water is considered a pollutant. The categories of pollutants are identified below:

- Oils and Greases
- Metals – Industrial areas, paints, pesticides and automobile emissions and brakes pads.
- Sediments- Cleared construction sites, agricultural lands
- Oxygen-Demanding Substances – Food wastes, chemicals
- Nutrients- Fertilizers, animal wastes, detergents, lawn clippings
- Toxic Organic Compounds – Pesticides and PCBs
- Total/Fecal Coliform Enterococcus bacteria – Pet waste, fertilizers – This will close the beaches to recreational activities

This Best Management Practices Manual is designed for Commercial/Industrial, Municipal, Construction, and Residential practices throughout the City of Encinitas. Each category is unique in its ability to control urban runoff. This manual provides the minimum level of BMPs available to date. This field is changing rapidly therefore, any supplemental ideas or suggestions will be evaluated on a case by case basis.

Commercial/Industrial - Best Management Practices (BMPs)

The Commercial/Industrial section provides a description of minimum BMPs options for high priority categories. High priority commercial establishments included are:

- Automobile mechanical repair, maintenance, fueling or cleaning
- Equipment repair, maintenance, fueling, or cleaning
- Automobile and other vehicle body repair or painting
- Automobile parking lots and storage facilities
- Retail or wholesale fueling
- Pest control services
- Eating or drinking establishments
- Mobile carpet, drape or furniture cleaning
- Cement mixing or cutting
- Painting and coating
- Botanical or zoological gardens and exhibits
- Landscaping
- Nurseries and greenhouses
- Golf courses, parks and other recreational areas
- Pool and fountain cleaning

A. POLLUTION PREVENTION

The following pollution prevention principles apply to most commercial sites:

- Use smaller quantities of toxic materials or substitute less-toxic materials.
- Minimize the volume of cleaning water to decrease wastewater.
- Provide signage to remind or instruct employees and customers.
- Implement a spill response plan.
- Segregate and recycle wastes.
- Provide a schedule of preventive maintenance.
- Train employees in pollution prevention initially and then periodically as needed.

B. MINIMUM BMPs FOR HIGH PRIORITY COMMERCIAL FACILITIES

1. Non-Structural BMPs

Non-structural control BMPs consist of procedures and practices that prevent pollutants from entering the storm drain system. Because of their low cost and simplicity, source control BMPs should be considered first in the development of a facility's BMP program. Many of these methods already may exist as part of the standard operating procedures for a site:

A) Good Housekeeping Practices

Good housekeeping practices are designed to maintain a clean and orderly work environment. A clean work environment reduces the possibility of accidental spills caused by mishandling of chemicals or equipment and should reduce safety hazards to facility personnel. Good housekeeping measures are or will be implemented in an effort to prevent pollutants from entering storm water discharges.

- Information on good housekeeping practices should be distributed during employee training sessions.
- Good housekeeping measures should be discussed at employee meetings.

- Employees should be informed of activities that could potentially cause contamination of storm water and the importance of carefully conducting these activities in areas that do not discharge/drain to storm drains.
- Good housekeeping tips and reminders should be posted on employee bulletin boards.

B) Preventive Maintenance

Onsite equipment needs to be maintained in good working condition. The preventive maintenance program shall include regular inspections and testing of facility equipment. The storm water preventive maintenance program and BMPs shall expand the current preventive maintenance program to include storm water considerations.

C) Material Storage Practices

Hazardous waste and materials used shall be properly identified, handled, and stored; and instructions shall be given to all site personnel. Improper storage of these materials can result in accidental spills and the release of materials. Any underground or aboveground storage tanks shall be designed and managed in accordance with applicable regulations, be identified as a potential pollution source, and have secondary containment, such as a berm or dike with an impervious surface.

D) Material Inventory Procedures

Site personnel should maintain an up-to-date inventory of all hazardous materials and wastes used at the facility. Chemicals used at the facility should be handled with adequate precaution. Hazardous and toxic materials used at the site must be identified, quantified, and managed in compliance with federal, state, and local regulations. In addition, materials should be recycled, reclaimed, and/or reused to reduce the volume of materials brought into the facility when possible, and less toxic or non-toxic materials should be substituted for toxic materials.

E) Solid Waste Handling and Recycling

Waste disposal areas should be kept free of litter and debris. Waste receptacles must have a cover or lid to prevent the contents from being dispersed by the wind or coming in contact with storm water. All recyclable wastes such as batteries, solvents, waste oil and anti-freeze should be stored in a covered area that prevents contact with storm water.

F) Train Employees

Create a training manual and retain records of employees attending.

G) Spill Response Plan

Spills and leaks are one of the largest contributors of storm water pollutants. An effective plan shall have spill prevention and response procedures that identify potential spill areas, specify material handling procedures, describe spill response procedures, and provide spill clean-up equipment. The plan should take steps to:

- Identify and characterize potential spills
- Eliminate and reduce spill potential
- Respond to spills when they occur in an effort to prevent pollutants from entering the storm water drainage system.

H) Record Keeping

Record keeping and internal reporting represent good operating practices as they increase the efficiency of the facility and the effectiveness of BMPs. A good record keeping system facility minimizes incident recurrence, responds with appropriate cleanup activities, and complies with legal requirements.

A record keeping and reporting system shall be set up to document spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Spills and other discharges are to be reported in accordance legal requirements. Incident records describe the quality and quantity of non-storm water discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

2. Structural BMPs

Structural BMPs consist of specialized equipment, structural components, or engineered technologies that can be used when source control BMPs are ineffective. Because structural BMPs are site specific, the facility operator needs to evaluate each proposed use. Proper installation and regular maintenance of structural BMPs are imperative to their effectiveness. Examples are as follows: (Appendix D)

- Overhead coverage of outdoor work areas or chemical storage;
- Retention ponds, basins, or surface impoundments that confine urban runoff to the site;
- Constructed wetlands
- Berms and concrete swales or channels that divert run-on and runoff away from pollutant sources;
- Secondary containment structures; and treatment controls, e.g., infiltration devices and oil/water separators, to reduce pollutants in storm water
- Biofilters
- Storm drain media inserts
- Divert to the sewer system.

3. BMP Standard

BMPs must be able to reduce pollutants in storm water runoff *to the maximum extent practicable*.

4. Designated High Priority Commercial Facilities

The following activities at high priority commercial sites must implement the BMPs addressed in the attached tables in Appendix A:

- Hazardous Material Storage (Table 1)
- Solid Waste Storage (Table 2)
- Loading/unloading of Significant Materials (Table 3)
- Vehicle Fueling (Table 4)
- Landscaping/grounds keeping (Table 5)

- Vehicle/Equipment Washing (Table 6)
- Cleaning and maintaining parking lots (Table 7)
- Outdoor Equipment Storage (Table 8)
- Cleaning and maintaining rooftops (Table 9)
- Wastewater Treatment (Table 10)
- Vehicle Maintenance (Table 11)

5. Hazardous Materials Management

Many commercial facilities handle hazardous materials during different stages of operation. All hazardous materials and hazardous wastes must be handled, stored, or disposed of as required by all applicable local, state, and federal regulations. For more information, facility operators should contact their County Hazardous Materials inspector or the County Hazardous Materials Division duty specialist at (619) 338-2231. Operators of plant (flora) production facilities (greenhouses and nurseries) and certain non-plant-production operations (golf courses, pest control services, botanical or zoological gardens, cemeteries, parks, and recreational facilities) should contact the County Department of Agriculture, Pesticide Regulatory Program, at (858) 694-3122 for information regarding the storage and handling of hazardous materials and wastes.

Municipal Program - Best Management Practices (BMPs)

This section provides a description of the goals and objectives, types of activities that have the potential to discharge pollutants, types of conveyances, potential pollutants and a list of potential BMP options for each minimum high priority category. Particular BMPs are not advocated and are presented here as recommended minimums.

Designated BMPs for Specific Municipal Activities/Areas

1. ROADS, STREETS, HIGHWAYS, and PARKING FACILITIES

A) Program Goal and Objectives

This program component is applicable to the Streets Department. The goal of this program is to ensure storm water pollution prevention practices are considered when conducting activities on or around these locations.

B) Potential Pollutant Generating Activities

- Vehicle Use
- Minor repairs
- Potholing
- Construction (placement of pedestrian ramps, sidewalks)
- Maintenance of drainage channels
- Repaving activities
- Washing
- Sweeping
- Degreasing
- Parking of Vehicles and Equipment

C) Possible Pollutants of Concern

- Heavy Metals-Brake linings
- Oils and Grease-leaking engines
- Herbicides-vegetation control
- Pesticides-animal control
- Paints-pavement painting
- Solvents-used when painting
- Battery Acid
- Anti-freeze-leaking radiators
- Litter
- Green waste-road side clipping, mowing
- Sediment-construction and moving of earth
- Detergents

D) Best Management Practices (BMPs)

Once potential and existing sources of storm water contamination have been identified, the next step is to select proper measures BMPs to eliminate or reduce pollutant loadings in the storm water discharges, and to prevent storm water from becoming contaminated with pollutants. These may include processes, procedures, and structural controls, and are selected to prevent contamination by stressing the importance of storm water management and employee awareness of potential pollutant sources. BMPs must be selected and implemented, where applicable, that are appropriate to prevent or mitigate pollution generated from the specific activities at the site.

a) Street Sweeping

Street sweeping is widely recognized as an effective method of reducing the amount of pollutants (litter, green waste, oils and grease and sediment) on street surfaces that may impact storm water. Trucks that collect the trash instead of pushing it around are the preferred alternative. The City uses two types of street sweepers depending on the type of debris to be removed. A broom sweeper is utilized to remove heavy silt and debris and a vacuum sweeper is utilized to collect litter and leaves. Both sweepers are in compliance with air quality requirements of Rule 1186. The frequency of street sweeping depends on traffic volume, arterial streets, such as Highway 101, and collector streets, such as Santa Fe Road, are swept weekly. Residential areas are swept monthly.

b) Litter Control

This program consists of street sweeping and removal of litter and debris from roadways, right-of-ways, drainage channels, parks and open space on an as-needed basis. Public Works crew initiate litter collection based on visual observations during routine maintenance activities, citizen complaints, and routine collection in areas of known debris accumulation. Litter is collected by Public Works crews and County Probation crews.

c) Roadway and Bridge Maintenance

The regular maintenance activities for roads and bridges may include, filling potholes, minor construction for sidewalks, and maintenance of drainage channels. To minimize the impact to storm water resulting from the maintenance of these facilities, the following BMP's are suggested;

- Repair potholes to reduce sediment loss and erosion.
- Be sure that all spare filling material on the road is collected.
- Conduct maintenance measures during dry weather
- Barricading drain inlets to reduce sediment or waste from entering the drain during maintenance and construction activities
- Storing materials away from conveyance systems.
- Constructing temporary onsite washout areas.
- Managing concrete cutting waste properly
- Inspect maintenance equipment for leaks.

d) Parking Surface Cleaning

Parking facilities are required to be cleaned on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions. If possible use dry cleaning methods to prevent the discharge of pollutants into the storm water conveyance system. Sweeping or vacuuming the parking facility is encouraged over any other method. If water is used to clean a parking facility the rinse water is not allowed to enter any storm water conveyance systems or receiving waters. Wash water should be directed toward the sanitary sewer or collected and discharged to a pervious surface. Seal storm drains with an impervious material before washing begins. Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

e) Housekeeping Practices

Soapy water remaining in mop or wash buckets should be discharged to the sanitary sewer through a sink, toilet, clean-out or wash area with drain. Routinely sweep, shovel and dispose of litter in the trash. Use dry clean-up techniques for chemical or oil spills. (e.g. scatter absorbent on the spill, let it completely absorb then sweep it all up and dispose of it in the proper manner).

2. CORPORATE STORAGE YARDS FOR MATERIALS, WASTE, EQUIPMENT AND VEHICLE MAINTENANCE, PUBLIC BUILDINGS, LANDSCAPE AND RECREATIONAL FACILITIES

A) Program Goal and Objectives

Activities at these facilities may generate waste, spills or leaks that could reach the storm drain system and receiving waters. The goal of this program is to ensure storm water pollution prevention practices are considered when conducting activities at these municipal facilities. For the purposes of this program, a public vehicle maintenance facility is determined to be any City-owned or operated facility that conducts industrial activity, operates equipment, performs fleet vehicle maintenance on ten or more vehicles per day (this includes repair, maintenance, washing, or fueling), or performs maintenance or repair of heavy industrial machinery/equipment.

A material storage facility stores chemicals, raw materials, or waste materials in quantities that require a hazardous materials business plan or a Spill Prevention, Control, and Counter-measures (SPCC) plan.

B) Pollutants of concern and sources

At a minimum, the potential for the following pollutants shall be addressed:

- Waste oil,
- Scrap metal,
- Used antifreeze,
- Used oil filters,
- Oily rags or towels,
- Sediment,
- Sludge, and
- Normal refuse associated with daily operations.
- Nutrients
- Pesticides
- Herbicides
- Nutrients
- Bacteria
- Metals
- Oils and Grease

C) Best Management Practices (BMPs)

Once potential and existing sources of storm water contamination have been identified, the next step is to select proper measures (BMP's) to eliminate or reduce pollutants in storm water discharges, and to prevent storm water from becoming contaminated with pollutants. These may include processes, procedures, and structural controls, and are selected to prevent contamination by stressing the importance of storm water management and employee awareness of potential pollutant sources. BMP's must be selected and implemented, where applicable, that are appropriate to prevent or mitigate pollution generated from the specific activities at the site.

a) Good Housekeeping

Good housekeeping practices are designed to maintain a clean and orderly work environment. A clean work environment reduces the possibility of accidental spills caused by mishandling of chemicals or equipment and should reduce safety hazards to facility personnel. Good housekeeping measures are or will be implemented in an effort to prevent pollutants from entering storm water discharges.

- Information on good housekeeping practices should be distributed during employee training sessions.
- Good housekeeping measures should be discussed at employee meetings.
- Employees should be informed of activities that could potentially cause contamination of storm water and the importance of carefully conducting these activities in areas that do not discharge/drain to storm drains.
- Good housekeeping tips and reminders should be posted on employee bulletin boards.

b) Improved Operation and Maintenance

Establish proper operation and maintenance practices to ensure processes and equipment are working well to lead to a reduction of materials entering the environment. Review current maintenance activities, evaluate if the maintenance efforts can directly or indirectly contribute pollutants to receiving waters, revise procedures or adopt additional BMPs as necessary to reduce the contribution of pollutants to receiving waters during maintenance activities, and educate employees on revised procedures.

c) Material Storage Practices

Hazardous waste and materials used shall be properly identified, handled, and stored; and instructions shall be given to all site personnel. Improper storage of these materials can result in accidental spills and the release of materials. Any underground or aboveground storage tanks shall be designed and managed in accordance with applicable regulations, be identified as a potential pollution source, have secondary containment, such as a berm or dike with an impervious surface.

d) Material Inventory Procedures

Site personnel should maintain an up-to-date inventory of all hazardous materials and wastes used at the facility. Chemicals used at the facility should be handled with adequate precaution. Hazardous and toxic materials used at the site must be identified, quantified, and managed in compliance with federal, state, and local regulations. In addition, materials should be recycled, reclaimed, and/or reused to reduce the volume of materials brought into the facility when possible, and less or non-toxic materials should be substituted for toxic materials.

e) Preventive Maintenance

Onsite equipment needs to be maintained in good working condition. The preventive maintenance program shall include regular inspections and testing of facility equipment. The storm water preventive maintenance program and BMP's shall expand the current preventive maintenance program to include storm water considerations.

f) Spill Prevention and Response

Spills and leaks are one of the largest contributors of storm water pollutants. An effective plan shall have spill prevention and response procedures that identify potential spill areas, specify material handling procedures, describe spill response procedures, and provide spill clean-up equipment. The plan should take steps to:

- Identify and characterize potential spills,
- Eliminate and reduce spill potential, and
- Respond to spills when they occur in an effort to prevent pollutants from entering the storm water drainage system.

g) Vehicle and Equipment Maintenance Operations

Many vehicle and equipment maintenance operations use materials or create wastes that are harmful to humans and the environment. Storm water runoff from areas where these activities occur can become polluted by variety of contaminants. Parked vehicles should be monitored closely for leaks and pans should be placed under any leaks to collect the fluids for proper disposal or recycling. The number of solvents used at the facility should be kept to a minimum to make recycling easier and to reduce hazardous waste management cost. Mechanics should clean vehicle parts without using liquid cleaners wherever possible to reduce waste. Steam cleaning and pressure washing may be used instead of solvent parts cleaning. The wastewater generated from steam cleaning must be discharged to an on-site oil water separator that is connected to a sanitary sewer or blind sump. Non-caustic detergents should be used instead of caustic cleaning agents, detergent-based or water-based cleaning systems in place of organic solvent degreasers, and non-chlorinated solvent in place of chlorinated organic solvents for parts cleaning.

h) Waste Disposal and Recycling

Waste disposal areas should be kept free of litter and debris. Waste receptacles must have a cover or lid to prevent the contents from being dispersed by the wind or coming in contact with storm water. All recyclable wastes such as 28 batteries, solvents, waste oil and anti-freeze should be stored in a covered area that prevents contact with storm water.

i) Vehicle and Equipment Washing

Washing vehicles and equipment outdoors or in areas where wash water flows onto the ground can pollute storm water. Wash water can contain high concentrations of oil and grease, phosphates, and suspended solid. Vehicle wash water is considered a process wastewater and needs to be disposed of properly. The City should use biodegradable, phosphate-free detergents for washing vehicles as appropriate. All washing of vehicles or equipment should be done inside on an impervious surface. The wash water must be collected and treated at the facility and either recycled or discharged to the sanitary sewer system or collected and disposed of as an industrial waste. If it is not feasible to wash the vehicles or equipment inside, then a designated area outside should be assigned for washing. This area must be bermed to collect the wash water and graded to direct the wash water to a treatment or disposal facility.

j) Loading and Unloading Materials

Loading and unloading operations usually take place outside on docks or terminals. Materials spilled, leaked, or lost during loading and unloading may collect in the soil or on other surfaces and be carried away by rainfall runoff or when the area is cleaned. Rainfall may wash off pollutants from machinery used to unload or load materials. If feasible employees should load and unload all materials and equipment in covered areas such as building overhangs at loading docks. Roof drains should be directed away from this area.

k) Storage Tanks

Accidental releases of chemicals from storage tanks can contaminate storm water with many different pollutants. Materials spilled, leaked, or lost from storage tanks may accumulate in soils or on other surfaces and be carried away by rainfall runoff. All specific standards set by Federal and State laws concerning the storage of oil and hazardous materials must be met. Employees shall be well trained to reduce human errors that lead to accidental releases or spills. Regular inspections of the integrity of all containers (i.e. tanks, drums) should be performed. All tanks and drum storage areas, whether permanent or temporary, should have a secondary containment system.

l) Outside Storage

Raw materials, by-products, finished products, containers, and other materials stored in areas exposed to rain and/or runoff can pollute storm water. Storm water can become contaminated by a wide range of pollutants when solid or liquid materials wash off or dissolve into the storm water, or when containers spill or leak. The City should store all materials inside. If this is not feasible, then all outside storage areas should be covered with a roof, and bermed, or enclosed to prevent storm water contact. At the very minimum, a temporary waterproof covering should be used over all materials stored outside. All materials stored outside should have some type of secondary containment system in case of spills or leaks.

m) Landscape Waste

Landscape waste consists of clippings, cuttings and droppings of leafy and woody materials. The following procedures should be implemented where applicable, to assure that exposed materials and accumulated trimmings and litter will be disposed of properly and not to the storm drain system.

- Require all employees and contractors who generate landscape waste to dispose of it at a approved composting location or permitted landfill; include such provisions in landscape maintenance contracts.
- Place temporary stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to the storm drain system.

n) Facility and Grounds Maintenance

The implementation of best management practices for campground, trail, and parking lot activities is designed to prevent pollutants from these areas from entering storm water conveyance systems. Litter and debris are collected and disposed of properly. All paved surfaces are swept if necessary and the waste is collected and disposed of properly. All storm drain inlets, culverts and dry creeks or swales are kept clean and free from debris.

All storm drain inlets should be covered when hosing the parking lot then wet-vac back into the sanitary system.

Minimizing the Use

Consider specific alternative products in lieu of pesticides to control insects, fungi and weeds: Certain insects, such as lacewing and ladybugs, can be used against unwanted pests. Compost and soil amendments can be used as natural alternatives to fertilizers. For more information on alternatives, contact agencies such as the Bio-Integral Resource Center (BIRC) in Berkeley, which conducts research and produces brochures and a newsletter on Integrated Pest Management. Modern gardening guides, such as the Sunset books, also include information on fertilizer and pesticide alternatives.

o) Pesticide, Herbicide, and Fertilizer Application and Handling

The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. The City of Encinitas endorses the Integrated Pest Management document created by Dr. Donald Trotter for implementation on the Cities public facilities.

Minimizing the Use

Consider specific alternative products in lieu of pesticides to control insects, fungi and weeds: Certain insects, such as lacewing and ladybugs, can be used against un-wanted pests. Compost and soil amendments can be used as natural alternatives to fertilizers. For more information on alternatives, contact agencies such as the Bio-Integral Resource Center (BIRC) in Berkeley, which conducts research and produces brochures and a newsletter on Integrated Pest Management. Modern gardening guides, such as the Sunset books, also include information on fertilizer and pesticide alternatives.

p) Facility Repair, Remodeling and Construction

During repair, remodeling and construction activities, there are a number of best management practices that should be implemented. Some examples include:

- Limiting the impervious area as much as possible
- Protect storm drain inlets to prevent the discharge of pollutants
- Employ erosion and sediment control if there is disturbed soil that has the potential to be discharged into a conveyance or receiving water
- If construction is due to start just prior to the forecast of inclement weather, divert all runoff away from the construction site

2. INDUSTRIAL FACILITIES

Industries are required to prepare a SWPPP (Storm Water Pollution Prevention Plan) and implement the BMPs prescribed therein. The following minimum BMPs are required for industrial sites:

- Maintain an up-to-date SWPPP for facility, and perform monitoring as required by the State General Industrial Permit. Monitoring results must be sent to the City of Encinitas annually.
- Vehicles must be cleaned in designated washing areas that provide for water recycling or discharge to the sewer system. These areas must be graded or bermed to prevent storm water run-on, use phosphate-free and biodegradable products whenever possible, and train staff on proper maintenance measures for the wash areas.
- Re-fueling areas are required to have readily accessible spill response equipment (including portable absorbent booms), to consider overhead coverage, train employees on methods to minimize pills and respond to spills, and provide readily available and bottom-sealed trash receptacles.
- Parking lots are required to be regularly (weekly or monthly) broom (dry) swept (cleaning with water is prohibited). Trash receptacles are required in parking lots to discourage litter. Fluid spills shall be cleaned up immediately with absorbent rags or material.
- Vehicle maintenance must be performed under cover with proper disposal of used fluids, parts, and rags.
- Prompt containment, cleanup, and reporting of any spills that may pose a threat to human or environmental health, including any spills to the storm drain system.

Reporting and Record Keeping

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the facility and the effectiveness of BMPs. A good record keeping system helps the facility minimize incident recurrence, correctly respond with appropriate cleanup activities, and comply with legal requirements. A record keeping and reporting system shall be set up by the City documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Spills and other discharges are to be reported in accordance

with the permit. Incident records describe the quality and quantity of non-storm water discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems have been established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation will contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps. All records shall be retained at the facility for at least one year after the expiration of the permit.

City owned and operated Industrial facilities have regulatory requirements placed on them in addition to the Permit. Each industrial facility must also meet specific waste discharge requirements and require compliance with a separate NPDES Permit. They include the following:

- Municipal Airports
- Active or inactive landfills
- Hazardous waste treatment, disposal and recovery facilities
- Water Treatment facilities/systems

In the City of Encinitas the only Industrial sites are the San Elijo Wastewater Facility and the Bus Depot at San Dieguito High School

Residential Best Management Practice (BMP)

The Residential Community can also improve water quality by minimizing the amount of pollutants generated and therefore the need to dispose of. By educating the public about the wastes generated by residential communities and the effect on the environment and water quality we can stop pollution before it begins.

1. AUTOMOBILE REPAIR AND MAINTENANCE

(a) Pollution Prevention

- (1) Encourage residents to use routine preventative maintenance practices.
- (2) Encourage and/or facilitate reductions in vehicle use:
 - Changes in driving habits
 - Carpooling
 - Increased use of public transportation
 - Biking or walking for short trips
- (3) Encourage residents to make timely vehicle repairs.

(b) Leaks and Spills

- (1) Encourage or require residents to prevent leaks and spills from contacting storm water
 - Use drip pans, plastic sheeting, or other materials to contain spills
 - Work indoors or under shelter
 - If working outdoors, don't do it in the rain
 - Require that leaks and spills be cleaned up when they occur
 - Use absorbent materials to clean up spills
 - Establish cleanup standards
 - Require that tools and parts be cleaned only in contained areas

(c) Materials and Waste Management

- (1) Require residents to properly manage and dispose of automotive wastes and materials:
 - Proper and lawful disposal of wastes
 - Recycling of oil and antifreeze
 - Storage of materials and wastes indoor or under cover
 - Use of secure and watertight containers when storing materials and wastes outside

(d) Restrictions on Activity

- (1) Encourage or require residents to use commercial repair and maintenance facilities to avoid the potential for pollution in residential areas.

2. AUTOMOBILE WASHING

(a) Pollution Prevention

- (1) Encourage residents to wash vehicles over porous areas.
- (2) Encourage residents to contain washwater on private property.

(b) Management / Reduction of Wash Water

- (1) Encourage residents to turn off the water when not in use or use a controllable spray nozzle.
- (2) Encourage or require residents to contain, capture, or divert wash water from the conveyance system (berms, etc.).
- (4) Encourage or require residents to wash vehicles over porous surfaces (grass, dirt, etc.).
- (5) Encourage or facilitate the establishment of neighborhood wash areas where wash water and contaminants can be properly managed.
- 6) Encourage residents to clean their vehicles using damp cloths, avoiding the generation of wash and rinse water.

(c) Materials and Waste Management

- (1) Encourage residents to properly dispose of soapy water or bucket rinse water (sanitary sewer or soak into lawn).
- (2) Encourage residents to launder rags and towels or dispose of them in the trash.
- (3) Encourage residents to use dry methods to degrease or clean especially dirty parts prior to wet washing and rinsing (e.g., remove grease or brake dust using towels, etc.).

(d) Restrictions on Activity

- (1) Encourage residents to use commercial wash facilities to avoid the potential for pollution in residential neighborhoods.

3. AUTOMOBILE PARKING

- (1) Encourage or require the proper design and construction of parking areas in residences.
- (2) Establish and enforce design standards for parking areas in residences.
- (3) Encourage residents to park over pervious surfaces (over lawns, dirt, etc.).
- (4) Encourage residents to use routine preventative maintenance practices and to make timely vehicle repairs.
- (5) Encourage cleaning of parking areas with dry cleaning methods.

4. HOME AND GARDEN CARE ACTIVITIES AND PRODUCT USE

(a) Pollution Prevention

- (1) Encourage the use of safe substitutes and alternative methods for garden use:
 - Teach and encourage integrated pest management techniques
 - Recommend the use of native plants and drought tolerant species to reduce water use and greenery waste produced
 - Encourage planting techniques to attract beneficial insects
 - Encourage the use of biological controls
 - Encourage composting, vermiculture and yard waste recycling
- (2) Recommend and encourage practical purchasing practices for pesticides and fertilizers:
 - Encourage residents to identify "pests" before attempting to eliminate them
 - Encourage residents to always read label instructions and follow the instructions for garden care products

- (3) Encourage water conservation practices:
 - Encourage the use of xeriscape gardening
 - Encourage the use of drip irrigation
 - Encourage the use of soaker hoses
 - Encourage the use of micro-spray systems
 - Encourage the repair or adjustment of irrigation that allows excessive runoff
- (4) Encourage planting or mulching of hillsides and slopes to prevent erosion.

(b) Leaks and Spills

- (1) Recommend immediate cleanup of spills of gardening chemicals, fertilizers, and soils.
- (2) Encourage residents to return spilled materials to the container for future use or proper disposal.

(c) Materials and Waste Management

- (1) Encourage the storage of lawn care products in closed labeled containers and in covered areas.
- (2) Discourage the use of materials during windy or rainy days.
- (3) Encourage or require stockpiles of soil, compost, or fertilizers be covered with plastic tarps to prevent dispersal by wind or rain.
- (4) Require disposal of household chemicals to household hazardous waste collection facilities or scheduled events.
- (5) Encourage or require dry sweeping techniques for clean up.
- (6) Encourage recycling of lawn clippings and greenery waste through local programs.

(d) Restrictions on Activities

- (1) Restrict hosing of paved surfaces to the street or gutter.
- (2) Prohibit disposal of hazardous waste to the trash, landfill or storm drain.

5. HOME CARE AND MAINTENANCE

(a) Pollution Prevention

- (1) Encourage purchasing practices that reduce waste.
- (2) Encourage the use of safe substitutes for home cleaning and maintenance.
- (3) Recommend product use only according to label instructions.
- (3) Encourage the use of water based paints when possible.

(b) Leaks and Spills

- (1) Require the cleanup of hazardous materials spills immediately.
- (2) Encourage the use of techniques for spill cleanup and proper waste disposal.

(c) Materials and Waste Management

- (1) Encourage storage of household hazardous materials in closed labeled containers in a covered area.
- (2) Encourage recycling of latex paint through community programs.

- (3) Encourage the disposal of unwanted household hazardous waste through household hazardous waste collection facilities.
- (4) Encourage recycling of unused, unwanted products.
- (5) Encourage recycling of unwanted appliances and household equipment.

(d) Restrictions

- (1) Restrict the disposal of wash waters (carpet cleaning, mop water, paint wash-up) from disposal to the street, gutter or storm drain.

6. DISPOSAL OF PET WASTE

Public awareness about the urban runoff problems associated with pet waste has increased greatly over the past few years.

(a) Pollution Prevention

- (1) Encourage or facilitate the use of spay / neuter programs to reduce feral dog and cat populations.

(b) Waste Management / Disposal

(c)

- (1) Encourage or require that pet owners clean up after their pets when walking them in public places.
- (2) Encourage residents to clean up feces from their yards if pets are allowed to defecate outside.
- (3) Require the proper disposal of pet feces (toilet or trash).

(d) Manure Management (Horses and Other Large Animals)

- (1) Encourage or require the proper management of manure (including the preparation of manure management plans when appropriate).
- (2) Encourage or require the composting of manure.

Construction Best Management Practices (BMP)

1. INTRODUCTION

The goal of this program is to eliminate non-storm water discharges, reduce storm water runoff from construction sites, to minimize or avoid the impacts of construction activities. Construction sites include any site where an activity such as grading, excavation, clearing, road construction, structure construction, or demolition results in the disturbance of soil. Construction site runoff may be laden with sediment from erosion and can be contaminated with materials used on the construction site (i.e. oil and grease).

2. SITE MANAGEMENT REQUIREMENTS

Dry Season Requirements (May 1 through September 30)

- A. Exposed disturbed areas must have erosion protection BMPs properly installed. This would include all building pads, unfinished roads and slopes. The only relief from this requirement for slopes greater than 3:1(Horizontal vs. Vertical) is if the site has properly designed de-silting basins at all discharge points.
- B. Adequate perimeter protection BMP's must be installed and maintained.
- C. Adequate sediment control BMP's must be installed and maintained.
- D. Adequate BMP's to control off-site sediment tracking must be installed and maintained.
- E. A minimum of 125% of the material needed to install standby BMP's necessary to completely protect the exposed portions of the site from erosion, and to prevent sediment discharges, must be stored on site. Areas that have already been protected from erosion using physical stabilization or established vegetation stabilization BMP's as described below are not considered to be "exposed" for purposes of this requirement.
- F. The Project proponent must have an approved "weather triggered" action plan and have the ability to deploy standby BMP's as needed to completely protect the exposed portions of the site within 48 hours of a predicted storm event. A predicted storm event is defined as a forecasted, 50% chance of rain. On request, the project proponent must provide proof of this capability.
- G. Deployment of physical or vegetation erosion control BMP's must commence as soon as slopes are completed for any portion of the site. The project proponent may not continue to rely on the ability to deploy standby BMP materials to prevent erosion of slopes that have been completed.

- H. The area that can be cleared or graded and left exposed at one time is limited to the amount of acreage that the project proponent can adequately protect prior to a predicted rainstorm.

This last requirement will require grading to be phased at larger sites. For example, it may be necessary to deploy erosion and sediment control BMP's in areas that are not completed but are not actively being worked before additional grading is done.

Rainy Season Requirements (October 1 through April 30)

In addition to the requirements listed under the Dry Season Requirements:

- A. Perimeter protection and sediment control BMP's must be upgraded if necessary to provide sufficient protection for storms likely to occur during the rainy season.
- B. Adequate physical or vegetation erosion control BMP's must be installed and established for all completed slopes prior to the start of the rainy season. These BMP's must be maintained throughout the rainy season. If a selected BMP fails, it must be repaired and improved, or replaced with an acceptable alternate as soon as it is safe to do so. The failure of a BMP shows that the BMP, as installed, was not adequate for the circumstances in which it was used. Repairs or replacements must therefore put a more robust BMP in place.
- C. The amount of exposed soil allowed at one time shall not exceed that which can be adequately protected by deploying standby erosion control and sediment control BMP's prior to a predicted rainstorm.
- D. A disturbed area that is not completed but that is not being actively graded must be fully protected from erosion if left for 10 or more days. The ability to deploy standby BMP materials is not sufficient for these areas. BMP's must actually be deployed.

3. CONSTRUCTION BMPS

Project Requirements

Construction activities such as, mass grading, clearing and grubbing, remove vegetation and disrupt the structure of the soil surface. This disruption leaves the soil susceptible to erosion. Grading and clearing activities cause rain to runoff at higher velocities and transport sediment downstream. Sediment can be detrimental to aquatic life by interfering with photosynthesis, respiration, growth and reproduction.

The construction conditioning process requires that any person submitting a grading permit application must also document that appropriate BMPs will be used to prevent storm water pollution from their project site. Depending on the size of the proposed project either of two documents must be completed and submitted with the initial grading permit application.

1. Certificate of Compliance with the California General Permit for Construction Activities:
This form must be completed if construction activities will result in a soil disturbance or clearing of 5 acres or more.
2. Storm Water Management Checklist – This form must be completed for all construction activities that disturb less than 5 acres of soil, but still pose a risk of storm water pollution.

The grading and construction activities will be reviewed by Storm Water staff during plan check and site inspections to verify compliance with the Grading Ordinance. Failure to comply with these regulations can result in Notice of Violations, Stop Work Orders, Citations and Fines.

An effective storm water management plan is one which all potential pollutants are recognized and a plan to control/prevent them is designed. The plan must include a combination of BMPs to target each potential pollutant. This should include the following control measures.

- a) Planning and scheduling
- b) Erosion Control
- c) Flow Control
- d) Sediment Control
- e) Waste Management

A) Planning and Scheduling

Grading and clearing should be phased to reduce the amount and the duration of sediment exposure. If possible schedule grading during the dry season (Mid-April through October) particularly avoiding December through February.

Consult with the National Weather Service at (619) 289-1212 to determine the forecast during the wet season. Plan to have erosion control methods in place 24 hours prior to a rain event.

B) Erosion Control

1) Physical Stabilization

- a) Geotextiles/Mats – Used for temporary or permanent soil stabilization, and are especially effective on steep slopes and channels. Geotextiles and mats are used to reduce erosion from rainfall impact, hold soil in place, and absorb and hold moisture near the soil surface.
- b) Hydraulic Mulch –. Hydraulic mulching is an erosion control measure that consists of applying a mixture of shredded wood fiber and tackifier with hydromulching equipment. Mulches protect the soil from rainfall impact or wind.
- c) Soil Binders – Soil binding consists of applying and maintaining polymeric or lignin sultanate soil stabilizers. Soil binders typically are applied to disturbed areas requiring temporary protection from erosion.
- d) Hydroseeding – Hydroseeding consists of applying a mixture of wood fiber, seed, fertilizer and stabilizing emulsion with hydromulch equipment. It is typically applied to disturbed areas requiring temporary protection against erosion.

2) Vegetation Stabilization

- a) Preservation of existing vegetation
- b) Seeding and planting
- c) Establish permanent landscaping

C) Flow Controls

Earth Dikes – These are structures that intercept, divert, and convey surface runoff, generally sheet flow, to a sediment-trapping device or stabilized outlet.

Drainage Swales & Lined Ditches – Divert off-site runoff around the construction site, divert runoff from stabilized areas around disturbed areas, and direct runoff into sediment basins or traps.

Outlet Protection/Velocity Dissipation Devices – Physical devices composed of rock, grouted riprap, or concrete rubble placed at pipe outlets to prevent scour and reduce the velocity and/or energy of exiting storm water flows. Outlet protection is needed where discharge velocities and energies at the outlets of culverts, conduits or channels are sufficient to erode the immediate downstream reach

Slope Drains – A slope drain is a temporary pipe or lined channel to drain the top of a slope to a stable discharge point at the bottom. Slope drains are usually lined ditches used to intercept and direct surface flow away from slope areas to protect cut or fill slopes. The slope drain is applicable for any construction site where concentrated surface runoff can accumulate and must be conveyed down the slope in order to prevent erosion.

D) Sediment Control

Storm Drain Inlet Protection – Devices used at storm drain inlets to detain and/or filter sediment-laden runoff to allow sediment to settle and/or to filter sediment.

Silt Fence – A silt fence is a temporary barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff from exposed, erodible soil. Silt fences may be used for perimeter control, placed upstream of the point(s) of discharge of sheet flow from a site. They may also be used as interior controls below disturbed areas where runoff may occur in the form of sheet or rill erosion, and perpendicular to minor swales or ditch lines.

Sandbag Barrier – A sandbag barrier is a temporary sediment barrier consisting of stacked sandbags designed to intercept and slow the flow of sediment-laden sheet flow runoff. Sandbag barriers allow sediment to settle from runoff before water leaves the construction site.

Fiber Rolls – A fiber roll consists of materials rolled or bound into a roll and placed on a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide some removal of sediment from the runoff.

Gravel Bag Berm – A gravel bag consists of gravel bags that are installed end-to-end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide some removal of sediment from the runoff.

Check Dam – A check dam is a small device constructed of rock or sandbags placed across a natural or man-made channel or drainage ditch. Restricting the velocity of flow in the ditch reduces erosion of the drainage ditch.

Desilting Basin – Sediment-laden runoff is directed to a designed temporary basin that allows sediment to settle out before the runoff is discharged. A desilting basin is generally less extensive than a Sediment Basin.

Sediment Trap – A sediment trap is a small temporary ponding area with a controlled release structure formed by excavating or constructing an earthen embankment across a waterway or low drainage area. Its purpose is to collect and store sediment from sites cleared and/or graded during construction for a *short* period of time (6 months).

Sediment Basin – A sediment basin is designed with controlled release structures and is constructed by excavating or constructing an earthen embankment across a ditch or low drainage area. Its purpose is to collect and store sediment from sites cleared and graded during construction for *extended* periods of time before reestablishment of permanent vegetation and/or construction of permanent drainage structures. They should be located at the storm water outlet for the site, but not in any natural or undisturbed stream.

Off-Site Sediment Tracking

- a) Stabilized construction entrances/exits – Stabilized entrance to reduce the tracking of mud and dirt onto public roads by construction vehicles.
- b) Construction road stabilization – A temporary access road connecting existing public roads to a remote construction area. It is designed for the control of dust and erosion created by vehicular tracking.

E) Waste Management

Below are some methods to manage construction wastes to prevent runoff into the drainage system.

- a) Spill Prevention and Control
- b) Solid Waste Management
- c) Hazardous Waste Management
- d) Concrete Waste Management
- e) Liquid Waste Management

Spill Prevention and Control

Each contractor must have a spill prevention and control plan in place prior to grading operations. The plan will include:

- Contact phone numbers, emergency and after-hours of responsible parties.
- Coordination with the City of Encinitas Public Works Department and Fire Department.
- Ability to control runoff through berms, gravel bags, sandbags or storm drain covers.
- Absorbent material on site.

Basic Guidelines:

- Spills shall not be buried or washed with water.
- Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses.
- Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities.
- Proper storage, clean up and spill reporting instructions for hazardous materials stored or used on the project site shall be posted at all times.

Minor Spills

- Use absorbent materials and do not hose down or bury the material.
- Remove the absorbent material and dispose of properly.

Semi-Significant Spills

- Contain the spill.
- Notify the Inspector.
- Clean up with dry methods.
- If the spill occurs in dirt areas, contain the spill with an earthen dike.
- Dig up and properly dispose of the material.
- If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant Spills

- Notify the Inspector immediately and follow up with a report
- Notify 911
- Notifications to external agencies will require a phone call and a written report.
- Obtain the services of a Haz-Mat team immediately. Construction personnel shall not attempt to clean up the job site.

Solid Waste Management

This is the practice to minimize or eliminate the discharge of pollutants resulting from the creation of stockpiling, and removal of construction waste.

- Place trash cans on construction sites
- Prevent storm water run-on and run-off through the use of berms, dikes and temporary diversion structures.
- Solid waste storage areas shall be located at least 15 m from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

Hazardous Waste Management

This is the practice to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain system or to watercourses.

Hazardous waste on construction projects is generated from the use of:

Petroleum products	Asphalt products
Concrete curing compounds	Pesticides
Palliatives	Acids
Septic Waste	Paints
Stains	Solvents
Wood Preservatives	Roofing Tar

Or any material deemed a hazardous waste in California, Title 22.

Major components of the hazardous waste management are education, proper storage and disposal procedures, maintenance and inspection.

Concrete Waste Management

This is the practice to minimize or eliminate the discharge of pollutants of concrete waste materials to the storm drain system. The discharge of pollutants to storm water from concrete waste can be prevented. Some ways to reduce concrete wastes in storm water are:

- Store dry and wet materials under cover
- Avoid mixing excess amounts of fresh concrete on-site
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams
- Perform the washout of concrete trucks off-site or in designated areas
- Do not allow excess concrete to be dumped on-site, except in designated areas
- On-site washout areas should be located at least 50 ft. from storm drains, creeks, ditches.
- Do not wash out slurries generated from saw-cutting, coring, grinding, grooving, and hydro-concrete demolition into the storm drain or drainage course.
- Educate employees, subcontractors and suppliers on concrete waste management
- Once concrete wastes are washed into the designated areas and allowed to harden, the concrete shall be broken up, removed, and disposed of.
- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be back-filled and repaired.
- Inspect weekly.

Liquid Waste Management

This is the practice to prevent discharge of pollutants to the storm drain system as a result of the creation, collection, and disposal of non-hazardous liquid waste.

Some ways to reduce liquid waste in storm water are:

- Employee, subcontractor and suppliers training

- Contain liquid waste in a controlled area, such as a holding pit, sediment basin or portable tank.
- Capture all liquid waste running off a surface, which has the potential to affect the storm drain system.
- Do not allow liquid wastes to flow or discharge uncontrolled.
- Inspect employees and subcontractors to ensure appropriate practices.
- Inspect containment areas.

POST CONSTRUCTION BMPS

Treatment BMPs

Biofiltration: Strips and Swales

Vegetated areas are “treatment zones” that enhance infiltration and pollutant removal.

Infiltration Basins

These devices store runoff and allow it to infiltrate into the ground. Infiltration effectively prevents pollutants in the captured runoff from reaching surface waters.

Infiltration trenches

Infiltration trenches function in a similar manner to infiltration basins. The trenches are often elongated, allowing them to be used in constricted areas.

Sand Filters

Sand filters are vaults or tanks with a layer of sand through which storm water flows by gravity. Filters are preceded by detention devices that provide pretreatment and protection.

Dry-Weather Flow Diversion

Dry weather flows from the storm drain system may be diverted to the sewer system. During wet weather, the diversion is suspended because wet weather flow volumes are greater than can be normally managed at POTWs.

**Appendix A
Best Management Practice (BMP) Tables**

Table 1. Hazardous Materials Storage

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Outdoor storage of hazardous materials	Storage Stock rotation	Spills Leaks Weathering	Hazardous liquids Petroleum products	Required	<ul style="list-style-type: none"> • Provide a Site Map • Maintain records for training of employees • Provide inspection reports from the County's Industrial Compliance Program • Segregate & separate waste • Label drums properly • Keep drums closed & in good condition • Provide secondary containment • Provide readily accessible spill response equipment • Report spills promptly • Provide overhead coverage

Outdoor containers	Aboveground storage tanks	Spills	Diesel	Required	<ul style="list-style-type: none"> Practice good housekeeping Provide secondary containment Provide readily accessible spill response equipment Report spills promptly Conduct periodic inspections Provide overhead coverage Maintain all wash water on site or send to sanitary sewer
Storage of liquids	Tank loading/unloading		Waste oil Motor oil Hydraulic fluid Transmission fluid		

Table 2. Solid Waste Storage

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Dumpster area	Trash storage & disposal	Debris Trash Green waste Liquid waste	Total organic carbon Cast-off items Garbage Litter	Required	<ul style="list-style-type: none"> Practice good housekeeping Dry sweep area routinely Train employees Keep lids closed Berm or enclosure to prevent runoff Consider overhead coverage Provide adequate number of containers in good condition Increase pick-up frequency when necessary Secure area from after-hours dumping Physically connect the drainage to the sewer system

Table 3. Loading and Unloading of Significant Materials

Area	Activity	Potential Pollutant Source	Type of Pollutant/Quantity	Required or Recommended	Best Management Practices
Loading docks	Loading & unloading	Spilled raw materials and motor fluids Dust & debris		<ul style="list-style-type: none"> • Required 	<ul style="list-style-type: none"> • Regular broom dry-sweeping of area • Train material-control staff to inspect incoming vehicles for leaking fluids • Train personnel to respond to spills of materials • Arrange rooftop drains to prevent drainage directly into loading areas • Pave loading areas with concrete instead of asphalt • Cover the loading dock • Avoid placing storm drains in the area or route to sewer • Install curbs/berms around the loading area • Grade the loading area to be sloped to direct flow toward an inlet with a shut-off valve. • Keep the valve closed at all times. Use berms or slopes to prevent run-on so that stormwater is not generally directed to the loading area. • Connect the inlet to the sanitary sewer, if allowed by local wastewater authority, and discharge to established limits

Loading dock	Breakdown of shipping containers, including disposable ones	Binding & packing materials	Litter: Paper, plastic, metal bands, staples, packing materials (styrofoam), cardboard	<ul style="list-style-type: none"> Cover loading areas Grade properly & install berms, Seal door skirt between trailer and building Divert storm water away from loading area Cover storm drain inlet during dry weather
	Material delivery & storage	Spills Leaks	Soil, pesticides, fertilizers, detergents, plaster, petroleum products, & hazardous chemicals	<ul style="list-style-type: none"> Minimize on-site storage of hazardous materials Store equipment and supplies in specifically designated areas with secondary containment, e.g., berms, pallets, & flow diversion Conduct regular inspections Train and educate employees & subcontractors
	Misuse or spillage of stored materials	Spills Leaks	Various	<ul style="list-style-type: none"> Label all containers according to their contents (e.g., solvent, gasoline) Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous) Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations)
	Transport of drums, containers and storage boxes carrying potential pollutants	Fractured or ruptured containers	Various	<ul style="list-style-type: none"> Move drums by using a barrel cart or by placing the drum on a pallet and moving it with a forklift Provide a minimum of two persons to assist forklift operator in transferring a drum to or from a pallet Secure stacked drums with metallic strapping
				<ul style="list-style-type: none"> Retrofit doorways used for loading with rubber or plastic door skirts to provide a strip barrier enclosing and sealing open end of the trailer with the open loading dock door

	Loading & unloading	Spills Leaks Accidents Flooding	Vehicular fluids Raw materials-dry and liquid Metal (brake linings)		<ul style="list-style-type: none"> • Maintain forklifts in good condition • Provide SPCC materials • Check trucks for leaks • Dry sweep routinely & practice good housekeeping • Unclog drains & provide grates, as needed • Train employees • Post written instructions & provide a sign-in log • Block stormwater drains during activities • Maintain log of activities
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Table 4. Vehicle Fueling

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Fueling area	<ul style="list-style-type: none"> Re-fueling of vehicles Re-fueling of equipment Replacement of equipment 	<ul style="list-style-type: none"> Spills Leaks Employee habits 	<ul style="list-style-type: none"> Diesel Gasoline Oil/grease Trash Litter 	<ul style="list-style-type: none"> • Required 	<ul style="list-style-type: none"> • Cover storm drains in the vicinity during transfer • Provide readily accessible spill response equipment • Report spills promptly • Train employees • Consider overhead coverage • Consider concrete surface separated from other areas • Bag trash from break/lunch room • Post "no littering" signs • Secure illegal dumping after hours • Report leaking vehicles to fleet maintenance
Intake area of underground or aboveground storage tanks	Refilling of storage tanks				<ul style="list-style-type: none"> • Design fueling area to prevent storm water runoff and spills • Cover area and use a perimeter drain or slope pavement inward with drainage to sump; pave area with concrete rather than asphalt. • Store portable absorbent booms (long flexible shafts or barriers made of absorbent material) in unbermed fueling areas
					<ul style="list-style-type: none"> • Use structural controls such as a low-flow sump, oil/water separator, wet pond or infiltration basin so that spilled material is not discharged into the rest of the storm drain system

					<ul style="list-style-type: none"> Use oil/water separators or underground vaults, such as a three-chamber separators, that allow for sedimentation, removal of oil and grease, and prevention of surcharge pressure
			Petroleum compounds, grease, floatable debris, & settleable solids		<ul style="list-style-type: none"> Install inlet catch basin equipped with a small sedimentation basin or grit chamber to remove large particles from storm water in highly impervious areas
			Settleable solids		

Table 5. Landscaping and Groundskeeping

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Throughout property	Landscape irrigation (daily)	Irrigation run-off	Sediment	<ul style="list-style-type: none"> • Required 	<ul style="list-style-type: none"> • Minimize use of fertilizers and herbicides • Store chemicals off-site by contracted landscaping firm • Train employees
			Fertilizers		
			Herbicides		
	Pruning	Green waste	Total organic carbon		<ul style="list-style-type: none"> • Sweep (dry) and collect for composting or trash removal
	Excavating		Sediment/rocks/sand		<ul style="list-style-type: none"> • Confine excavated materials to pervious surfaces away from sidewalks, pavement, & ditches • Cover piles during rains
	Pest control		Herbicides/pesticides		<ul style="list-style-type: none"> • Plan & implement an Integrated Pest Management system
Garage	Equipment fueling Equipment maintenance		Oil/grease		<ul style="list-style-type: none"> • Keep spill response materials readily accessible • Perform repairs indoors or on impervious or covered surfaces • Use proper funnel, drains, & pans
			Gasoline		
			Waste oil		

<p>Grounds & medians</p>			<ul style="list-style-type: none"> • Utilize water delivery rates that do not exceed the infiltration rate of the soil • Periodically observe areas that are watered to identify and correct damaged sprinkler systems, to adjust sprinkler heads, and to identify areas of excess watering and runoff • Where practical, use automatic timers to minimize runoff • Avoid overspray to minimize runoff and contact with equipment in the areas surrounding the targeted landscape • Use fertilizer/herbicide/pesticide in accordance with manufacturer instructions • Prevent overspray or application of chemicals outside of the targeted landscaped area
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Table 6. Vehicle/Equipment Washing

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Outdoor or indoor area	Washing	Vehicle body or engine Equipment	Oil/grease Antifreeze Spent solvents Heavy metals Toxic chemicals	<ul style="list-style-type: none"> • Required 	<ul style="list-style-type: none"> • Mark the area clearly as a wash area • Post signs stating that only washing is allowed in wash area • Provide trash container in wash area • Install sumps or drain lines to collect wash water to the sewer system • Cover the wash area when not in use to prevent contact with rain water • Grade or berm area to prevent run-on • Wash in designated washing facilities • Use phosphate-free and biodegradable products whenever possible • Train staff on proper maintenance measures for the wash area

Table 7. Parking Lots

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Parking lots		Automobile fluid leaks Trash	Heavy metals: Zn, Cd, Pb, Cu Vehicular fluids: antifreeze, motor oil, brake fluid, steering fluid, gasoline, transmission fluid Litter/debris: rubber, grease, solids, leaves, grass, trash	<ul style="list-style-type: none"> Recommended 	<ul style="list-style-type: none"> Regularly broom (dry) sweep parking lot to minimize cleaning with water Provide trash receptacles in parking lot to discourage litter Clean up fluid spills immediately with absorbent rags or material Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices Utilize sand filters or oleophilic collectors for oily waste in low quantities. Arrange rooftop drains to prevent drainage directly onto paved surfaces Design lot to include semi-permeable hardscape

Table 8. Outdoor Equipment Storage

Area	Activity	Potential Pollutant Source	Type of Pollutant/	Required or Recommended	Best Management Practices
Outdoor equipment storage	Storage		Lubricants and other petro-chemicals	<ul style="list-style-type: none"> Required 	<ul style="list-style-type: none"> Drain all lubricants and other petrochemicals prior to storage and dispose of them properly Block all storm drains during dry weather Inspect equipment weekly for leaks or spills Cover equipment storage areas and dispose of rainwater inside the berm as a waste
Outdoor storage yard	Long-term storage	Leaks Weathering Debris	Rust Hydraulic fluids Oil/grease	<ul style="list-style-type: none"> Required 	<ul style="list-style-type: none"> Block all storm drains during dry weather Remove, recycle, or sell cast-offs as scrap material Practice good housekeeping Drain fluids before storage, where feasible, and dispose of them properly Train employees
	Short-term storage	Spills Leaks Run-on			<ul style="list-style-type: none"> Train employees Practice good housekeeping Isolate area with berms or curbs to protect against run-on materials Install overhead coverage

Table 9. Rooftops

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Roof-HVAC	Cooling	Condensate	Heavy metals: Cu, Zn	Recommended	
Roof	Rain	Runoff	Asphalt aggregate Particulates Heavy metals		<ul style="list-style-type: none"> Route to recycler
Work areas	Rain, air emissions, control	Runoff, specific systems e.g. baghouse filters	Particulates Heavy metals		<ul style="list-style-type: none"> Route downspouts away from work areas and toward lawns Conduct preventative maintenance
	Emergency generators	Leaks	Diesel		<ul style="list-style-type: none"> Conduct preventative maintenance

Table 10. Wastewater Treatment

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Facility	Maintenance activities (pipe/line cleaning) & repair	Overflow events	Bacteria Viruses Fecal coliform	<ul style="list-style-type: none"> Required 	<ul style="list-style-type: none"> Use vacuum equipment in the case of a spill to divert the sewage from the storm drains Covering or barricading storm drain inlets and other immediate downstream stormwater conveyance systems Report spill immediately Storing materials away from storm drains Constructing temporary washout areas Inspecting equipment for leaks Collecting and removing waste for proper disposal

Table 11. Vehicle Maintenance

Area	Activity	Potential Pollutant Source	Type of Pollutant	Required or Recommended	Best Management Practices
Indoor garage	Change oil, routine engine work	engine	Oils, grease, antifreeze, heavy metals, paint	<ul style="list-style-type: none"> Required 	<ul style="list-style-type: none"> Block indoor drainage Keep equipment clean; avoid build up of grease and oil Drain fluids from any retired vehicles stored on site Inspect equipment in the yard Maintain the yards storm drain outlets with regular cleanings Areas are kept clean by "dry" sweeping
Outdoor	Change oil, routine engine work	engine	Oils, grease, antifreeze, heavy metals, paint	<ul style="list-style-type: none"> Required 	<ul style="list-style-type: none"> Cover storm drain during dry weather Keep drip pans or containers under the vehicles at all times Provide a designated area for vehicle maintenance Provide berms around storm drains Cover the work area so as to limit exposure to the rain when not in use

