

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.