



STORMWATER BEST MANAGEMENT PRACTICE (BMP) GUIDE for CONSTRUCTION and BUILDING ACTIVITIES

STORMWATER POLLUTION

When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance ("storm drain") system. The storm drain system is designed to prevent flooding by transporting water away from urban areas. Unfortunately, this water and all the contaminants it contains eventually flow to our streams, lakes, and the ocean where we swim and fish. Once there, polluted runoff can harm wildlife and their habitats. In some cases, it can even cause beach closures or make our fish and shellfish unsafe to eat.

Construction activities can be a significant source of stormwater contamination. During the life of a project, many types of materials and wastes are routinely used or generated. If not properly managed, sediment and other pollutants (paint, concrete, drywall, fuels, solvents, etc.) can be washed or tracked offsite, eventually entering the storm drain system. It might not seem like your activities alone could be damaging to the environment; but the cumulative impact of all of the construction projects conducted throughout the City every year can seriously impact the health of our local waterbodies.



What are you adding?

For more information, or to report stormwater pollution, pick up the phone and dial (858) 720-2477 and speak to the Engineering Department.

PROJECTS 1 ACRE AND GREATER

If your project will disturb one acre of land or more, you must also obtain coverage under the Statewide General Construction Activity Stormwater Permit. This permit, issued by the California State Water Resources Control Board (SWRCB), will require you to prepare a Storm Water Pollution Prevention Plan (SWPPP), and to implement BMPs to reduce stormwater pollutants both during and after construction is completed. For information on obtaining coverage under the General Construction Permit, and other available resources, contact the SWRCB at (916) 341-5537

YOUR RESPONSIBILITIES

City of Solana Beach Stormwater Ordinance prohibits the discharge of pollutants to the storm drain system. Simply stated, only rain may legally enter the storm drain. As a construction site owner or operator, you are legally responsible for ensuring that sediment and other construction-related pollutants are properly managed. This means that pollutants from your site may not enter the storm drain system or any receiving water (such as creeks, streams, etc.) either directly or indirectly. You can also be held responsible for discharges or environmental damage caused by your employees or subcontractors.

Your grading and construction activities will be reviewed by City staff during plan check and site inspection to verify their compliance with the Stormwater Ordinance and related provisions of the City Grading Ordinance. Failure to comply with these regulations can result in civil and criminal penalties.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices (BMPs) are activities or practices designed to reduce or eliminate pollutants in stormwater. Proper selection and implementation of BMPs will help you to prevent stormwater pollution from your site. On the following pages, a number of BMPs that apply to erosion control and other construction activities are described. It is your responsibility to determine which of these (or other BMPs) are most appropriate for your project, and to implement them accordingly. The success of your efforts will ultimately depend on whether or not you have prevented pollutants from leaving the site.

Remember, knowledge is the most important tool on your site. Training your employees and subcontractors is the best way to ensure that your BMPs are implemented and maintained effectively.

EROSION CONTROL BMPs

EROSION CONTROL STRATEGY

Sediment is the most common pollutant washed from construction sites. It also transports numerous other contaminants such as paint, cement wash, asphalt, and automotive fluids. Sediment loss is best controlled by using a combination of BMPs to target each stage of the erosion process. This should include the following general steps

- Step 1. Use advance planning and scheduling
- Step 2. Stabilize slopes and exposed surfaces
- Step 3. Divert or dissipate onsite flows.
- Step 4. Capture sediment from runoff.

STEP 1: PLANNING AND SCHEDULING

Planning and scheduling should always be part of your erosion control strategy. Effective planning can greatly reduce the need for other costly and time-consuming solutions. It can also save you considerable money. Whenever possible, plan your project to utilize existing topography, drainage patterns, and vegetation. This will significantly reduce the potential for erosion both during and after construction.

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. Always be aware of forecasted weather conditions prior to any scheduled grading or clearing activities.

For weather forecasts, contact the National Weather Service at (858) 675-8700, or visit www.weather.com

STEP 2. STABILIZING SLOPES AND SURFACES

The City Grading Ordinance requires that slopes be stabilized as soon as they are created to increase their resistance to erosion. When permanent stabilization of slopes or other exposed surfaces is not yet feasible, temporary measures should always be used. A number of practical solutions can be used.

Preservation of Existing Vegetation.

Leaving existing vegetation (trees, vines, shrubs, grasses, etc.) in place can minimize the potential for erosion as well as the need for other costly controls

Seeding and Planting. Seeding grasses and planting trees or ground cover provides long-term stabilization of slopes and soils. Schedule landscaping to permanently cover exposed surfaces as soon as they are created.

Mulching. Mulches (such as wood chips, bark, straw, gravel, etc.) can be used to temporarily or permanently stabilize cleared or freshly seeded areas. Mulches should be inspected weekly and after rain for damage or deterioration.

Geotextiles and Mats. Geotextiles and matings can be used for temporary or permanent soil stabilization, and are especially effective on steep slopes and channels. They should be inspected monthly and after significant rainfall.

Stabilization of Vehicle Traffic Areas. All areas of significant vehicle traffic (site entrances, access roads, parking lots, etc.) should be stabilized immediately after grading to prevent erosion and control dust. Site entrances and exits are especially important. Use gravel approaches to limit tracking of sediment offsite.

Remember, the effectiveness of BMPs you use will depend on their proper implementation and maintenance. Routine inspection and evaluation, especially before and after rainfall, should be part of your pollution control strategy.

Step 3: DIVERTING AND DISSIPATING FLOW

Effectively preventing sediment erosion generally requires a combination of surface stabilization and onsite flow control. Flow control methods reduce the ability of rainwater to erode sediments either by decreasing its velocity or by channeling it away from exposed surfaces. A number of practices are commonly used.

Earthen Dikes. Earthen dikes are berms or ridges of compacted soil (or other onsite materials) that divert flow away from slopes or other exposed areas. They are relatively inexpensive and can be constructed during initial grading operations.

Temporary Drains and Swales. Temporary drains and swales can be used to divert runoff around the site or disturbed areas.

Slope Drains. Slope drains are temporary pipes or lined channels that drain the top of a slope to a stable discharge point at the bottom.

When using flow diversion BMPs, remember that concentrated flows must be dissipated. Flow dissipation (check dams, rip rap, etc.) should always be used at drain or channel outlets to reduce runoff velocity and promote sedimentation. Care should also be taken not to disturb downstream properties.



Step 4: CAPTURING SEDIMENT FROM RUNOFF

Because sediment erosion can never be completely prevented, your control strategy should also include BMPs designed to recapture sediment from flows. The following methods are commonly used to promote sedimentation by filtering or trapping runoff.

Silt fences. Silt fences are a filter fabric attached to supporting poles, sometimes backed by wire. They are used in areas of sheet flow. Silt fences require frequent inspection, especially before and after rainfall.

Straw Bale Barriers. Straw bales can be used to create a temporary sediment trap in areas of sheet or rill flow. Bales are entrenched and placed end to end along a level contour. They should be inspected frequently since they tend to deteriorate.

Sand Bag Barriers. Stacking sand bags along a level contour can create a temporary sediment trap by ponding water upstream of a barrier. Sand bags are very versatile and can be used in a number of applications.

Brush and Rock Filters. Barriers constructed of brush or rock (3/4" to 3" diameter) can be used in areas of sheet or rill (channelized surfaces) flow to reduce velocity and trap sediment. They must be properly anchored, and should be inspected at least monthly and after each rainfall.

Sediment Traps and Basins. Traps and basins are excavated or constructed (berms, embankments, etc.) areas where runoff is trapped and sedimentation occurs. Traps are used for small drainage areas (less than 5 acres) and basins for larger ones. Both traps and basins should be constructed before clearing, grading, and grubbing begins, and located where they can be easily cleaned out.

Storm Drain Inlet and Creek Protection. Your erosion control strategy should always address the protection of onsite or down-gradient storm drain inlets and waterbodies. Discharges of pollutants to storm drains, or streams and other waterbodies, may result in violations of the City Stormwater and Grading Ordinances, the Federal Clean Water Act, and the California Fish and Game Code.

GENERAL CONSTRUCTION BMPs

In addition to sediment, many other types of pollutants are used or generated during building and construction.

Paint Wastes	Dement Wash	Drywall	Solvents	Adhesives
Glues	Trash	Cleared Vegetation	Wood	Asphalt
Demolition Wastes	Vehicle Fluids	Septic Wastes	Asbestos	Acids

Remember, discharging anything other than rain to the storm drain is against the law. All materials and wastes must be managed and disposed of properly. The BMP described below will help to prevent stormwater pollution from your construction activities.

MATERIALS and WASTE MANAGEMENT

- Use designated delivery, pickup, and storage areas away from drainage paths and waterways.
- Store only the materials you need onsite.
- Store materials (especially open bags) under a roof or inside a building. Cover and berm around storage areas. Cover materials stored outside with waterproof tarps.
- Keep an inventory of materials and regularly inspect storage areas.
- Store and dispose of wastes as required by Federal, State, and local regulations
- Use watertight dumpsters.
- Wash out concrete trucks offsite or in a designated area (e.g. a temporary pit where the concrete can set, be broken up, and then disposed of properly).

SPILL CONTROL

- Train employees on spill prevention and cleanup
- Make sure cleanup materials are easily accessible.
- Use secondary containment (drain pans, drop cloths, etc.) to catch spills and leaks
- Clean up spills immediately.
- Use as little water as possible ("dry" methods) for washing and spill cleanup.

VEHICLES AND EQUIPMENT

(Cleaning, Fueling, and Maintenance)

- Fuel, maintain, and wash vehicles offsite.
- If conducting activities onsite, use designated areas. Cover and berm work areas as necessary.
- Properly maintain vehicles and equipment to prevent leaks.

Additional Resources

City of Solana Beach Engineering Department
(858) 720-2477 www.ci.solana-beach.ca.us/

San Diego Regional Water Quality Control Board
(SDRWQCB)
(858) 467-2952 www.swrcb.ca.gov/rwqcb9/

California State Water Resources Control Board (SWRCB)
(916) 341-5250 www.swrcb.ca.gov

U.S. Environmental Protection Agency (Region 9)
(415) 972-3510