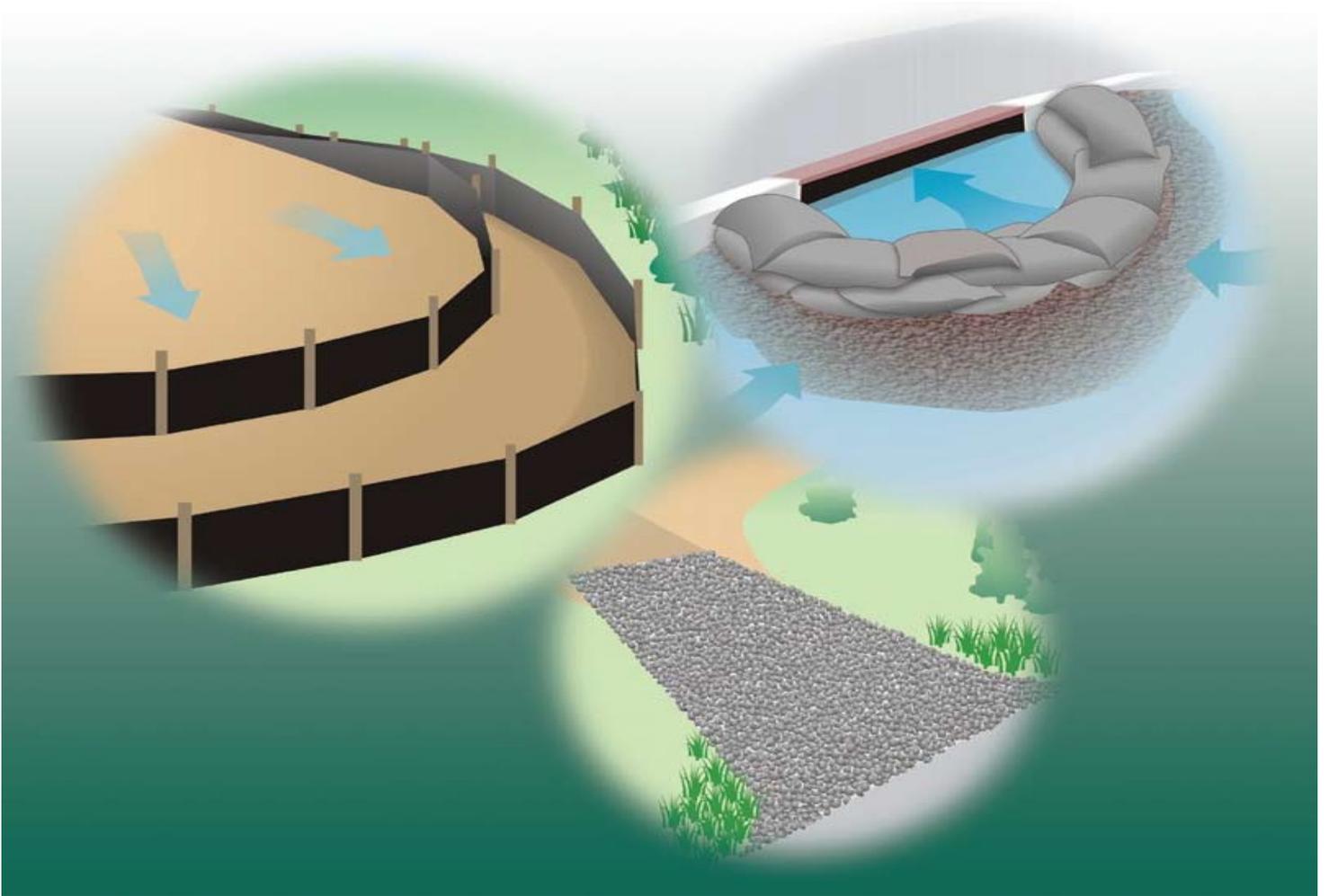


Erosion Prevention, Sediment and Pollution Control BMPs



**Greater Bay Area Environmental
Neil Trenerry CESSWI, QSP
CESSWI Lic #2956
Risk Consultant
925-752-4843**

Greater Bay Area Environmental
www.gbaenvironmental.com

TABLE OF CONTENTS

Introduction

Erosion and Sediment BMPs

Storm Drains

Stabilized Construction Exit

Silt Fence and sediment barriers

Temporary sediment trap

Pollution Prevention

Solid Waste

Hazardous materials

Secondary Containment

Concrete Washout

Porto Potty

Resources

StormPOP

Forms

Daily BMP Checklist

Erosion Prevention, Sediment Pollution Control BMPs

You can avoid many problems at your construction site by following the advice “divert the clean water, trap the dirty water.” Limit the amount of ground you disturb and re-vegetate as soon as possible to prevent runoff from getting dirty in the first place. Divert clean water coming on to your site so you don’t have to spend extra money treating it. Finally, for the areas of the construction site you do have to disturb, design practices to minimize erosion and then select practices to control sediment once erosion occurs.

Minimize disturbance

You must plan for and implement appropriate construction phasing to minimize exposed soil at any one time. Schedule clearing, grading, excavating and other land disturbing activities only when you will be actively working on that portion of the project. Preserve existing vegetation at the site where possible. This includes areas next to stream banks, steep slopes, floodplains, and other sensitive areas. The location of areas not to be disturbed must be delineated (e.g., with flags, stakes, signs, silt fence, etc.) on the development site before work begins.

Protect slopes and ditch bottoms (normal wetted perimeters)

Use terracing or soil roughening practices to decrease runoff velocities, trap sediment, and increase infiltration on slopes. Tracking with machinery up and down (perpendicular to the slope) will provide grooves that catch seed and rainfall, reducing runoff and making it more difficult for rills and gullies to form on the slope. For steep slopes, consider blankets, seeding or hydromulch to stabilize the slope. Slopes with a grade of 3:1 or more must not have an unbroken slope length greater than 75 feet. Consider benching, staked fiber rolls, or other practices to break up the slope.

Permit requirement (Part IV.B.2-3):

All exposed areas must have temporary erosion protection or permanent cover for the exposed soil areas as soon as possible but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

Any temporary or permanent ditch that drains water from a construction site or diverts water around a site, must be stabilized within 200 lineal feet from the property line or from the point of discharge to any surface water. Stabilization must take place within 24 hours of connecting to a surface water.

Storm drain inlet protection

Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. This allows sediment-laden runoff to pond and settle before entering the storm drain. Several types of filters are commonly used for inlet protection: silt fence, sand bags or block and gravel. The type of filter will depend on inlet type (curb inlet, drop inlet), slope, and amount of flow. Many commercial inlet filters are also available. Some commercial inlet filters are placed in front or on top of an inlet, others are placed inside the inlet and under the grate.

Permit requirements:

All storm drain inlets must be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Inlet protection may be removed for a particular inlet if a specific safety concern has been identified and you have received written correspondence from the jurisdictional authority. (Part IV.C.4)

All sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs (Part IV.E.4)

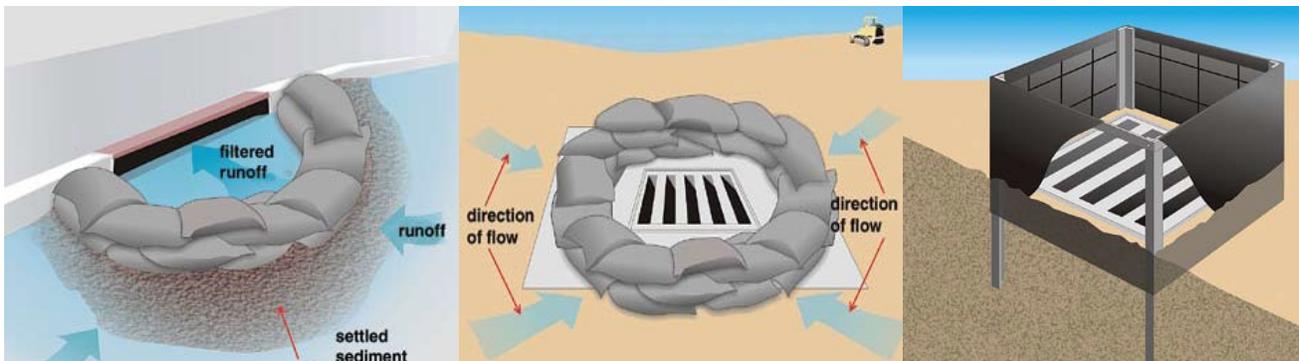
Installation tips:

Install inlet protection as soon as storm drain inlets are installed (or before land disturbance activities begin in areas with existing storm drain systems)

Protect all inlets that will receive storm water from your construction project.

Inlet protection is a secondary BMP. Make sure you have other erosion prevention and sediment control BMPs in place.

Safety is a consideration when determining the best method to protect an inlet. For example, if two feet of ponded water around an inlet will cause flooding of a nearby roadway, have an overflow at one foot of depth and additional controls at the outlet.



Maintenance:

Inspect inlets at least weekly and within 24 hours after each rain event of at least .5 inches within a 24-hour period. The next inspection must be conducted within seven days after that.

Remove accumulated sediment behind the inlet protection and any sediment that enters a storm drain.

Replace the inlet protection when it becomes damaged.

Stabilized Construction Exit

A rock construction exit can reduce the amount of mud transported onto paved roads by vehicles. The construction exit does this by removing mud from the vehicle tires before the vehicle enters a public road.

In some cases, a wash rack may be used to wash tires and keep driving surfaces mud-free. Wash water must be directed to a suitable settling area and must not be discharged to a stream or storm drain.

Permit requirements:

Vehicle tracking of sediment from the construction site must be minimized by BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto the street. (Part IV.C.6)

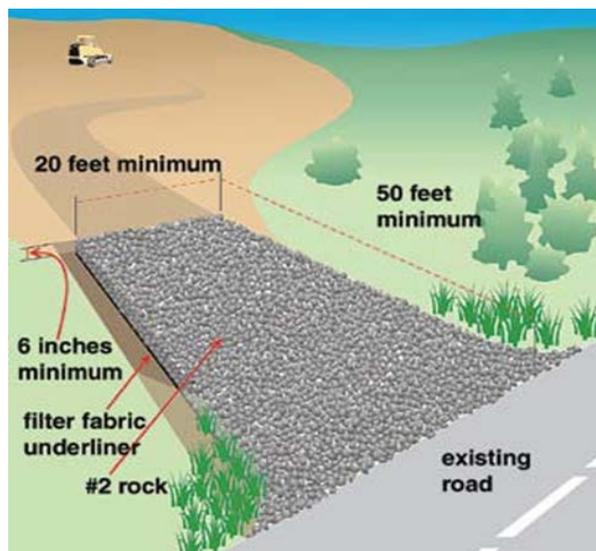
Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off-site paved surfaces within 24 hours of discovery, or if applicable, within a shorter time. (Part IV.E.4.d)

Installation tips:

The exit must be at least 50 feet long (generally the length of two dump trucks), and the exit must be graded so runoff does not enter the adjacent street.

Place a geotextile fabric under a layer of aggregate at least 6 inches thick. The aggregate must be a minimum of 1 to 3 inches (larger aggregate is better).

Direct employees to use the designated construction exits.



Maintenance:

Replenish or replace aggregate if it becomes clogged with sediment.

Sweep the street regularly.

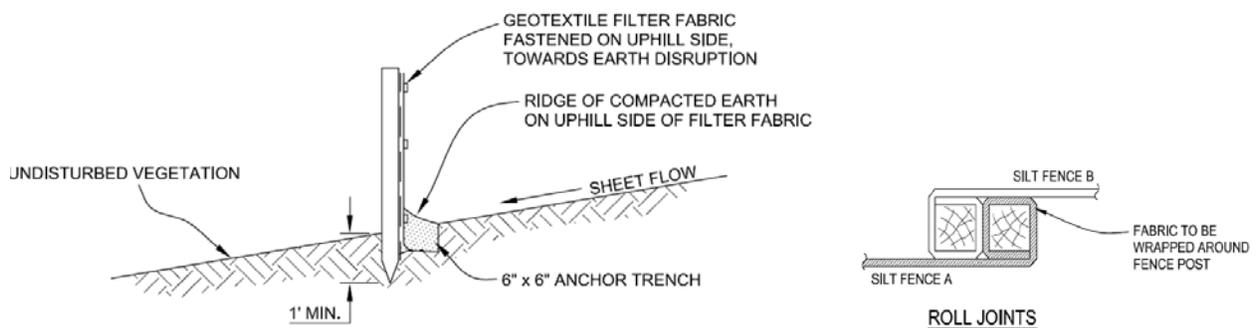
Silt fence and sediment barriers

Silt fence is a temporary sediment barrier consisting of a geotextile, which is attached to supporting posts trenched into the ground. The purpose of a silt fence is to filter out sediment-laden runoff as it ponds on the uphill side. However, a silt fence is only designed for runoff from small areas, and is not intended to handle flows from large slopes or in areas of concentrated flow.

Permit requirements:

Sediment control practices must be established on all down-gradient perimeters before any up-gradient land disturbing activities begin. These practices must remain in place until final stabilization has been established (Part IV.C.2).

All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access (Part IV.E.4.a).



Installation tips

DO:

Install silt fence along the contour of a slope

Trench in the silt fence on the uphill side (trench should be 6 inches deep by 6 inches wide)

Install stakes on the downhill side of the fence

Curve the end of silt fences up-gradient so that it contains the muddy runoff

DON'T:

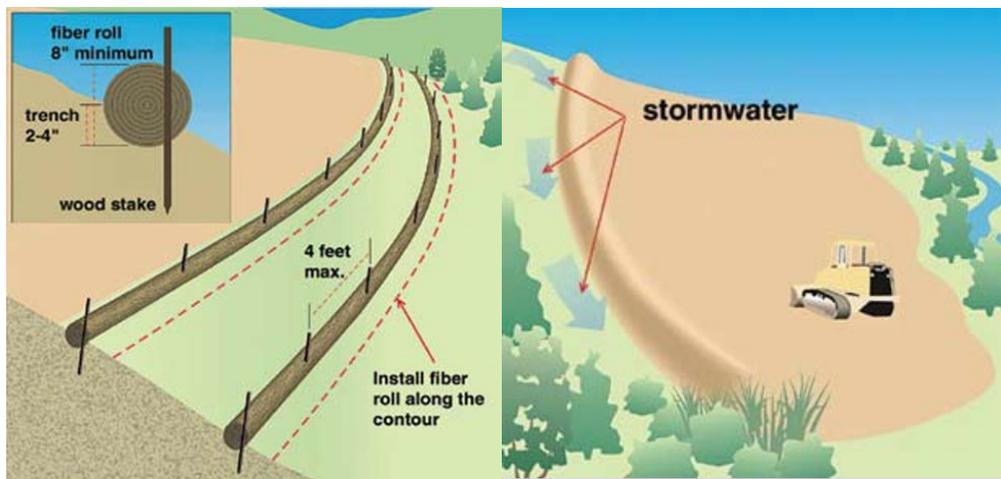
Install silt fence at the top of hills, or up and down hills

Install silt fence in ditches, channels or areas of concentrated flow

Use silt fence for areas that drain more than ¼ acre per 100 ft. of fence.

Rely on silt fence as your only BMP; use it in combination with other practices.

Sediment barriers such as fiber rolls or wattles function similar to silt fence, and many of the same installation tips apply.



Maintenance:

Remove sediment when it reaches 1/3 of the height of the fence

Replace the silt fence where it is worn, torn, or otherwise damaged.

Diversion ditches/berms

Diversion ditches or berms direct off-site runoff away from unprotected slopes or direct sediment-laden runoff to a sediment trapping structure. A diversion ditch can be located at the upslope side of a construction site to prevent surface runoff from entering the disturbed area. Ditches or berms on steeper slopes may need to consider erosive velocities. Also, ensure diverted water is released through a stable outlet and does not cause downstream flooding.

Installation tips:

Divert runoff coming on to your construction site (generally used to protect areas of five acres or less).

Clean runoff must be discharged to a stable outlet or channel, sediment-laden water must be diverted to a sediment-trapping structure.

The ditches or swales must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connecting to a surface water. Stabilization of the remaining portions of any temporary or permanent ditches or swales must be complete within 14 days after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased.

Maintenance:

Inspect diversions and berms after each rain event (within 24 hours of a .5 inch rain in a 24-hour period), including outlets.

Remove any accumulated sediment.

Mats, mulches, and blankets

Mats, mulches, and blankets are used for temporary stabilization and establishing vegetation of disturbed soils. Mats and blankets are typically used on slopes or channels while mulches are effective in helping to protect the soil surface and foster vegetation.

Installation tips:

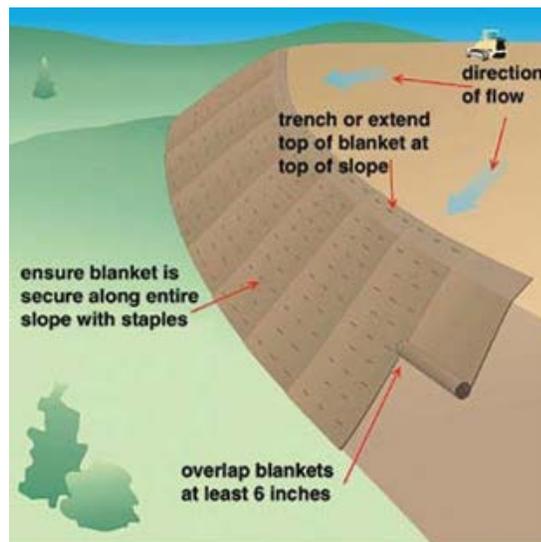
Mats and blankets must be used on slopes steeper than 3:1 and in swales or long channels (mulches are generally not recommended on slopes greater than 3:1).

Trench the top of the blanket in to prevent runoff from flowing under the blanket.

Overlap the end of each blanket and mat.

Staple blankets and mats according to specifications.

Do not place mulch in areas of concentrated flow.



Maintenance:

Periodically check for signs of erosion or failure.

Apply additional mulch or repair blanket/mat if necessary.

Continue inspections until vegetation is established.

Temporary sediment trap or pond

A temporary sediment trap, pond or basin is a temporary ponding area formed by constructing an earthen embankment with an outlet across a swale. Temporary sediment traps are intended to detain sediment-laden runoff from small, disturbed areas long enough to allow the majority (at least 75%) of the sediment to settle out. Sediment traps are designed for small areas. The volume of the trap must be at least 1,800 cubic feet per acre of contributing drainage.

Permit requirements:

See Part III.B of the permit for temporary sediment basin design details.

Installation tips:

Install the basin in the low point of your construction site.

Install the basin before land disturbing activities begin.

Install a gravel outlet following BMP design

The basin must not be installed in a main stream.



Maintenance:

Remove the sediment in the basin when it reaches about 1/2 the design volume.

Check the outlet for needed maintenance.

Pollution Prevention BMPs

Solid Waste

Provide appropriate containers for solid waste and empty them frequently. If necessary, containers must be covered to prevent wind from blowing the waste around the construction site. Solid waste includes collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes.

Permit requirement:

Solid Waste: Collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly.

Hazardous Materials

Hazardous materials must be properly stored, and must have secondary containment to prevent spills, leaks or other discharges. These materials must be stored in a shed or building that can be locked to prevent vandalism or unauthorized access. Hazardous materials include oil, gasoline and paint, so ensure that these materials are also properly stored.

Permit requirement:

Hazardous Materials: Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restrict access to storage areas to prevent vandalism.



Secondary Containment

Secondary containment is a temporary, structural BMP that acts as a failsafe for primary containment vessels of petroleum products, including fuel, and hydraulic fluid. Be aware that some tanks are double walled, satisfying the secondary containment requirement.

Installation tips:

Secondary containment should be installed to a capacity of 110% of the volume of the largest container in the storage area.

Secondary containment can exist as a metal container, bermed areas, or excavated pits. A liner may be required for secondary containment in your area, check local regulations for specifics.

Prefabricated containers provide means of draining storm water (drain holes) that collects in the device without having to actively pump the water out.

Secondary containment facilities should be regularly drained of any collected materials so that their capacity at any point in time is equal to 110 percent of the primary storage containers. Placing these storage vessels under a roof of some sort will greatly reduce the amount of water that can collect there.



Maintenance:

Repair damage to the storage vessel.

Replace drain plugs that are not in place.

Pump out and properly dispose of standing product and/or rainwater in the tanks.

Vehicle washing

Avoid washing vehicles on the construction site. If washing is necessary, designate a site where the runoff can be contained and properly disposed of, such as an adequately sized sedimentation basin. Engine degreasing is not permitted on the construction site. Maintenance of vehicles must occur in a properly equipped shop, and not on the construction site.

Permit requirement:

External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

Concrete Washout

The liquid and solid wastes generated by concrete washout operations have to be deposited in leak-proof containers and afterwards, the wastes must be disposed of properly. The concrete washout needs to be dewatered and then it can be ground and recycled or taken to a demolition landfill. Signs need to be posted of the site(s) where concrete washout operations take place.

Permit requirement:

Concrete washout onsite: All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and therefore must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.



Porto Potty

Sanitary Waste Management is a temporary, structural BMP designed to prevent sanitary and septic waste from being introduced to storm water through proper collection and removal techniques.

Installation tips:

All portable toilets and other sanitary/septic waste management devices should be located downstream from drain inlets, waterways, or traffic.

In high wind areas, sanitary facilities should be anchored to prevent them from blowing over.

Waste waters and materials should never be disposed of on-site.

A frequent, regular waste collection schedule should be arranged to avoid overflow conditions.

Locate in area that is accessible for regular maintenance.

Maintenance:

Empty portable toilets regularly.

Right portable toilets that have tipped over.

Clean chemical and organics that may have leaked or spilled out of the toilet storage container.



Resources

To help check for upcoming storms, I recommend setting up with

StormPOP

<https://www.stormpop.com>

Overview

Get rain event alerts for all of your construction projects. Monitor multiple project locations and get email notifications before the storm arrives. Simple solutions to construction stormwater monitoring.

Below you can see an example of what the email alert looks like.

From: StormPOP Alert
Subject: Alert for irvine, ca 92618
Date: December 26, 2010 4:50:39 AM PST
To: user@example.com

User, this is your new or ongoing alert for irvine, ca 92618.

The probability of precipitation reaches a maximum of 44% within the next 7 days.

Probability of Precipitation Details

17% for Today
8% for Tonight
4% for Tomorrow
0% for Tomorrow Night
1% for Tuesday
22% for Tuesday Night
44% for Wednesday
28% for Wednesday Night
14% for Thursday
10% for Thursday Night
9% for Friday
12% for Friday Night
13% for New Years Day

Login to your account at StormPOP.com to see the details of all of you projects on the My Projects page.

Depending on your project location, you may also be able to view and print the current NOAA report at <http://www.wrh.noaa.gov/forecast/wxtables/index.php?lat=33.66210&lon=-117.79580&print=1&table=custom&duration=7&interval=6>

Daily BMP Checklist

Construction Site: _____

BMPs	Location	In Good Condition				
		Yes	No	N/A	Photo	Comments
Perimeter						
Silt Fences						
Fiber Rolls						
Construction Entrance						
Storm Drain Inlets						
Ditches/Berms						
Detention Pond						
Hazardous Materials						
Secondary Containment						
Concrete Washout						
Porto Pottys						
Other						

Name

Signature

Date