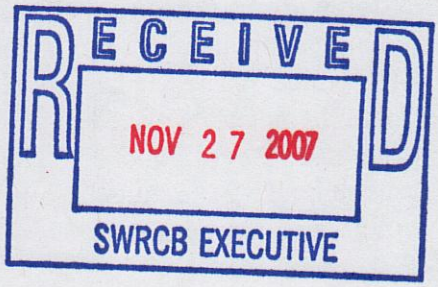
ASSOCIATION OF COMPOST PRODUCERS

"We Build Healthy Soil"

November 26, 2007



Jeanine Townsend, Acting Clerk to the Board
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
Via E-mail: commentletters@waterboards.ca.gov

RE: Comments on Caltrans Storm Water Management Plan

The Association of Compost Producers (ACP) appreciates the opportunity to provide comments on the California Department of Transportation's (Caltrans) proposed revised Storm Water Management Plan (SWMP). ACP requests consideration of the use of compost-based Best management Practices (BMPs) for stormwater erosion and sediment control and provides two draft compost-based stormwater BMPs being developed with the California Stormwater Quality Association (CASQA) as enclosures ("Proposed Draft Fact Sheet for CASQA Construction Stormwater Manual Proposed, EC-14, Compost Blankets – Overview" and "Proposed Draft Fact Sheet for CASQA Construction Stormwater Manual, SE-12 Compost Filter Socks for Perimeter Control, Curb and Drain Inlets, Slope Interruption, and Check Dams – Overview").

ACP Background

ACP's mission is to build healthy soils by expanding compost markets. ACP is a non-profit association of compost producers and marketers, feedstock generators including municipalities, public-owned treatment works (POTWs), and chippers and grinders. Our members represent approximately 18 million residents in the Southern California region.

Compost products are manufactured to meet the specifications of the end user. Compost can be prepared as a premium soil amendment that provides a host of benefits to the health of soils and plants including key organics and slow-release nutrients. Compost can also be prepared for effective, long-term erosion and sediment control applications (stormwater BMPs) because of its excellent water retention, infiltration, filtering, and energy dissipation abilities. This helps to keep slopes in place, encourages vegetation to

grow, reduces runoff and filters suspended solids and contaminants resulting in improvements in our state's water quality.

Compost-based stormwater BMPs can replace, outperform, and are more environmentally and greenhouse gas-friendly as well as socially responsible than traditional erosion and sediment control BMPs such as silt fences, hydroseeding, sand bags and straw wattles. The compost used in these BMPs meets research and technology-based specifications to ensure the protection of water quality.

Statewide Importance of Compost

Composting and developing compost markets are key strategies for the California Integrated Waste Management Board (CIWMB) to reduce the amount of recyclable organic materials placed in landfills as their support of the California Global Warming Solutions Act of 2006. The composting process can actually serve as a net producer of green house gas credits because there is more avoidance and sequestration than releases of green house gases.

It is critically important to increase the use of compost and expand compost markets statewide in order to ensure the continued viability of composting as a management tool and to meet the increasing demands on composting to remove more organics from landfills.

To that end, the CIWMB, in partnership with the Caltrans Headquarters Landscape Architecture Program, recently sponsored a series of workshops that educated various Caltrans staff on new special provisions that focus on improving roadside re-vegetation for erosion control and stormwater quality through compost-based best management practices (BMP). ACP and several of its members were extensively involved in these workshops and the development of the specifications that encouraged Caltrans to use more compost in their projects. These specifications can be found on the Caltrans website: http://www.dot.ca.gov/hq/LandArch/policy/compost_specs.htm.

The revised Caltrans SWMP comment period is an excellent opportunity to continue the process of integrating compost into Caltrans' statewide approach to designing and implementing stormwater BMPs. Compost has an extensive body of research available, has been demonstrated as an effective stormwater BMP in other states, and Caltrans has been using compost extensively to meet requirements for Lake Tahoe area permits.

California Stormwater Quality Association's (CASQA) California Stormwater BMP Handbook for Construction

ACP is currently working with CASQA to develop Fact Sheets for compost filter socks (SE-12) and compost blankets (EC-14) (see enclosed drafts) added to the next publication of the CASQA California Stormwater BMP Handbook for Construction. The Handbook is being updated in conjunction with the State Water Resources Control Board reissuing the statewide general construction stormwater permit.

Caltrans SWMP Opportunities for Compost Inclusion

ACP requests Caltrans to update the SWMP and related guidance documents to include compost filter socks and compost blankets, as well as to better integrate compost into the water quality, project design, construction, and maintenance approaches. ACP is happy to work with Caltrans staff on this process.

Establishing Need for New BMP

Section 4.2 of the SWMP outlines the process for identifying and prioritizing BMP needs as well as the criteria that Caltrans is looking for in order to add new BMPs to their toolbox. ACP believes that there is a need for adding compost technologies to Caltrans' stormwater toolbox based on research showing performance weaknesses in certain traditional BMPs such as silt fences and hydroseeding. Compost technologies excel in removing commonly targeted constituents in stormwater and total maximum daily loads (TMDLs) such as total suspended solids and hydrocarbons.

While a student at the University of Georgia, Dr. Britt Faucette conducted several studies comparing compost BMPs to other commonly used, traditional BMPs and demonstrated compost's superior performance as a stormwater tool. Dr. Faucette's research dovetailed into his current work at Filtrexx, which has been the industry leader in researching, demonstrating, and documenting benefits of compost-based technologies, and establishing installation and product specification standards. These compost-based products have been used nation-wide, in thousands of projects nationwide, especially with state transportation authorities. Literature is available at Filtrexx's website (www.filtrexx.com).

BMP Evaluation

ACP believes that Caltrans' evaluation of compost-based BMPs with respect to technical feasibility, operation and maintenance requirements, performance evaluation, and costs of implementation within the transportation infrastructure would have a positive and favorable outcome.

In the Lake Tahoe area Caltrans has experience incorporating compost into the design and construction of their projects. These requirements were originally adopted to protect the water quality of Lake Tahoe.

Compost-based BMPs perform more favorably from a financial standpoint when their long-term life-cycle costs are considered rather than just short-term installation costs. Compost-based BMPs typically outperform, last longer, require less maintenance and less disposal costs than traditional BMPs and can save on costs for follow-on landscape installation and maintenance. As a side note, ACP is aware of some potential discrepancies in Caltrans' compost cost tracking, so we request to be consulted when evaluating costs.

Integration of BMPs into Department Guidance and Policy

Through the CIWMB and Caltrans Landscape Architecture Program partnership noted above, ACP is aware that some "new special provisions," noted above, have been

developed to integrate compost for erosion control and stormwater quality. However, we don't believe these specifications have been linked to and reflected in the current SWMP and supporting policies, manuals, and guidelines.

Construction Site BMPs
In reviewing Table 6.1, ACP appreciates Caltrans inclusion of "preserving existing vegetation" as a BMP since vegetation is ultimately the best erosion control.

ACP believes that compost-based blankets can be included in Caltrans' SWMP and program in a similar capacity as the items listed under "temporary slope stabilization" (hydraulic mulch, hydroseeding, soil binders, straw mulch, and geotextiles, mats / plastic covers and erosion control blankets).

To take this concept a step further, we believe there could be a category for "permanent slope stabilization" that compost-based BMPs would also be applicable. ACP advocates integrating landscape planning and design into the stormwater BMP planning and design process (Sections 5 and 6 of the SWMP) in order to realize cost savings and maximize erosion control opportunities associated with establishing vegetation as quickly as possible. Compost is a key ingredient in establishing vegetation through healthy soils.

In closing, ACP appreciates Caltrans' demonstrated commitment to incorporating compost into their program to date. We also appreciate the SWRCB and Caltrans allowing us this opportunity to call attention to the need to more fully integrate compost into Caltrans' design and implementation of stormwater BMPs. We hope that this communication serves as a base for future evaluations of high-performance stormwater products made from compost.

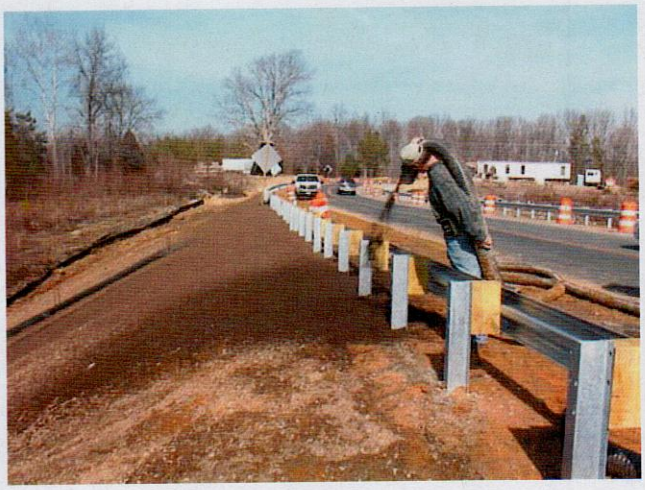
Thank you for your consideration of our comments. ACP is willing to provide further details on our comments and assist Caltrans staff in refining their SWMP and supporting documents. If you have any questions, feel free to contact me by phone at (909) 472-1255 or email at john.gundlach@garick.com or you may contact ACP's Executive Director, Dan Noble, via phone at (619) 303-3694 or via email at dan@resourcetrends.com.

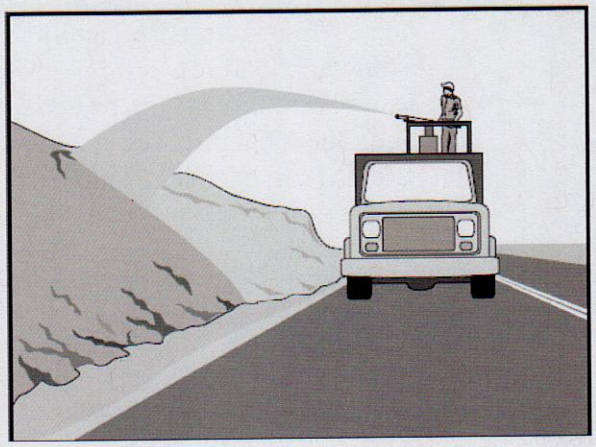
Sincerely,

Dan Noble
Executive Director
Association of Compost Producers

John Gundlach, Garick Corporation
President of the Board
Association of Compost Producers

PROPOSED DRAFT FACT SHEET FOR CASQA CONSTRUCTION STORMWATER MANUAL
PROPOSED - EC 14 - Compost Blankets - Overview





Description and Purpose

Compost Blankets are applications of composted media with a pneumatic blower device that:

- Increases absorption and infiltration thereby reducing runoff and pollutant loads
- Increases underlying soil quality
- Dissipate energy from rain drops, and
- Helps quickly re-establish vegetation.

Compost blankets are especially effective as a long-term erosion control since they build the quality of the soil, which means better water infiltration, establish vegetation, reduced runoff, and less erosion control maintenance in the long-term.

Suitable Applications

Compost Blankets are to be used on exposed / disturbed soil areas for either temporary or long-term protection against erosion.

Limitations

Compost Blankets can be used on slopes up to 2:1 without the use of additional soil stabilizers or support practices. Slopes greater than 2:1 require the use of additional support practices such as netting or soil stabilizers.

Objectives

EC Erosion Control ☑
SE Sediment Control ☒
TR Tracking Control
WE Wind Erosion Control
NS Non-Stormwater Management Control
WM Waste Management and Materials Pollution Control

Legend:

☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents

Sediment ☑
Nutrients
Metals
Bacteria
Oil and Grease
Organics

Potential Alternatives

EC-4 Hydroseeding
EC-13 Polyacrylamide
EC-2 Preservation of Existing Vegetation
EC-5 Soil Binders
EC-6 Straw Mulch
EC-7 Geotextiles and Mats
EC-8 Wood Mulching
EC-10 Velocity Dissipation Devices

Compost Blankets are not to be used in direct or concentrated runoff flow situations or in runoff channels.

Implementation

General

- Compost Blankets are typically used after final grading for temporary or permanent seeding applications.
- Custom seed mixes may be added to the Compost Blanket and applied directly to the slope. The local office of the U.S.D.A. Natural Resources Conservation Service (NRCS) is an excellent source of information on appropriate seed mixes.
- Non-seeded applications shall be considered a temporary form of erosion control.
- Compost Blankets may be used in place of other traditional blanket technologies (e.g., hydroseeding plus mulching) with similar or superior results.

Design and Layout

- For most applications, it is important to apply Compost Blankets at about a one to two inch-depth ensuring that the soil surface is completely and uniformly covered; however, this may vary depending on slope and size of the drainage area.

- Compost Blankets are normally installed using a pneumatic blower device or "blower truck." This equipment must be used to comply with this specification and the vehicles must have a calibrated seeder attachment for 'living blanket' applications that require seeding. Alternate seeding mechanisms may be used, including blending seed into the compost evenly prior to application with the blower trucks.

- It is imperative at all times that compost blankets be "lapped" over the top of the shoulder of the slope they are applied to. A minimum overlap of five to ten feet is suggested in order to make sure water runs on top of the compost blanket, not under it. If the compost blankets are not installed properly and water is allowed to get under the compost blanket at the top of the slope, rills may form and the slopes will have to be repaired.

- Compost Blankets may be used in conjunction with Compost Filter Socks, support practices, netting, and surface stabilizers to reduce effective slope lengths, runoff velocity, turbidity, suspended solids, and the potential for rill erosion, especially on more extreme slopes.

Materials

- **Compost:** Compost used for Compost Blankets needs to be weed free and derived from a well-decomposed source of organic matter.
    - The compost needs to be produced using an aerobic composting process meeting CFR 503 regulations, including time and

      temperature data indicating effective weed seed, pathogen and insect larvae kill.
    - The compost needs to be free of any refuse, contaminants or other materials toxic to plant growth.
    - Non-composted products are not acceptable.

- Test methods for the items below should follow USCC TMECC guidelines for laboratory procedures:

- Non-seeded compost blankets: Particle size – 100% passing a 2" sieve, 99% passing a 1" sieve, minimum of 90% passing a ¾" sieve in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification".

- For seeded Compost Blankets, seed should be incorporated at the time of application in the entire depth of the compost blanket, at rates per foot, per square yard, or per acre, as acceptable to the engineer. The following particle sizes shall also be followed: 100% passing a 2" sieve, 99% passing a 1" sieve, minimum of 60% passing a ½" sieve. All other testing parameters remain the same. The seeding rates are generally similar or slightly higher than those used when considering application of seed via hydroseeding or other seeding methods.

- Moisture content of less than 60% in accordance with standardized test methods for moisture determination.

- Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.

- Once vegetation is established, final seeding is not required.

Costs

Costs for application are in the $5,000 - $10,000 per acre. Costs are more competitive when average life-cycle costs are factored in (minimal maintenance over long periods and no disposal is required).

Inspection and Maintenance

Compost Blankets should be regularly inspected to make sure they hold and are protecting the soil adequately. In cases where minor rills form, they should be repaired immediately by blowing more product onto the slopes and into the rills and compacting the area with foot traffic.

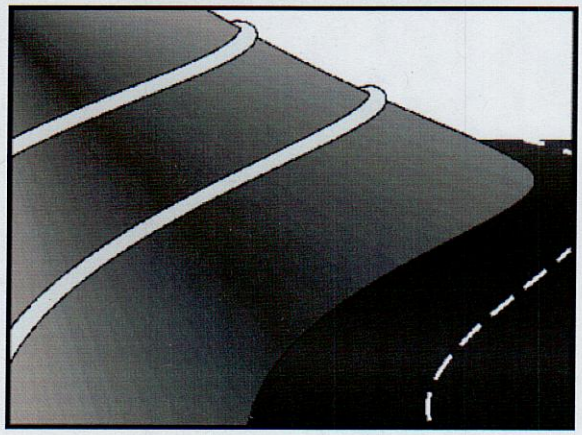
No disposal is required.

References

- Caltrans Landscape Architecture compost specifications: http://www.dot.ca.gov/hq/LandArch/policy/compost_specs.htm.
- Filtrexx Standard Specifications and Design Manual, July 2007, Version 6.0 US Patent 7,226,240. Available at www.filtrexx.com.
- Filtrexx Design Tool™ for SiltSoxx™ developed by The Ohio State University. Refer to the (Filtrexx Library #301) and Design Capacity Prediction Tool for SiltSoxx™ and Silt Fence (Filtrexx Library #3313) and Flow-Through Rates and Evaluation of Solids Separation of Compost Filter MediaTM vs. Silt Fence in Sediment.

PROPOSED DRAFT FACT SHEET FOR CASQA CONSTRUCTION STORMWATER MANUAL

SE-12 Compost Filter Socks for Perimeter Control, Curb and Drain Inlets, Slope Interruption, and Check Dams - Overview



Description and Purpose

Compost Filter Socks are three-dimensional tubular sediment control and storm water runoff filtration devices typically used for perimeter control of sediment and soluble pollutants (such as phosphorus and petroleum hydrocarbons), on and around construction activities.

They trap sediment and soluble pollutants by filtering runoff water as it passes through the matrix of composted media (applied with a pneumatic blower device or equivalent) by allowing water to temporarily pond, creating a settling of solids.

Hydraulic-flow-through rates with Compost Filter Socks typically exceed values for traditional silt fence. Life-cycle costs may also be less than traditional silt fence.

Suitable Applications

Compost Filter Socks can be used in areas where runoff is in the form of sheet flow and low concentrated flow or in areas that silt fences are normally considered acceptable.

- ***High Flow Rate, Low Maintenance:*** For applications where storm water and/or hydraulic flow rates may be high, flow energy dissipation is of greater priority than sediment and pollutant removal, or where low maintenance is of greater priority than sediment and pollutant removal from storm water.
- ***High Sediment and Pollutant Removal:*** For applications where sediment and pollutant removal/reduction from water or storm water is a

Objectives

SE Sediment Control ☑
NS Non-Stormwater Management Control
WM Waste Management and Materials Pollution Control

Legend:

☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents

Sediment ☑
Nutrients
Metals
Bacteria
Oil and Grease ☒
Organics

Potential Alternatives

SE-1 Silt Fence
SE-3 Sediment Trap
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-9 Straw Bale Barrier

priority; pollutants include suspended solids, turbidity, nutrients, heavy metals, and petroleum hydrocarbons.

- It should be noted that maintenance requirements (for sediment removal) may be higher with this option, with lower hydraulic-flow-through rates/permittivity. For some BMPs it is acceptable for overflow to occur and in some cases this may be part of the engineering design.

Compost Filter Socks can be used in areas:

- Site perimeters
- Above and below disturbed areas subject to sheet runoff, interrill and rill erosion
- Above and below exposed and erodible slopes
- Along the toe of stream and channel banks
- Around area drains or inlets located in a 'sump'
- On compacted soils where trenching of silt fence is difficult or impossible
- With high sheet runoff and erosion on steep slopes up to a 1:1 grade (should be used in conjunction with slope stabilization/erosion control technology on slopes > 4:1)
- Around inlets
- In areas with disturbed soils (e.g., construction sites requiring sediment control)
- In sensitive environmental areas including where migration of aquatic life, including turtles, salamanders and other aquatic life is impeded by the use of silt fence
- Around sensitive trees where trenching of silt fence is not beneficial for tree survival or may unnecessarily disturb established vegetation
- On frozen ground where trenching of silt fence is impossible

Limitations

- Compost Filter Socks must contain composted material that matches the particle size and other specifications in the Materials section.
- It is possible (but not recommended) to drive over Compost Filter Socks during construction, but these areas should be immediately repaired by manually moving back into place, if disturbed. Continued heavy construction traffic will reduce the effectiveness of the Compost Filter Socks.

Implementation

General

Compost Filter Socks control sediment by trapping sediment and slowing water velocity that filters through the Compost Filter Socks. Heavy rains may create temporary ponding but the Filter Socks hydraulic flow through rate is better than traditional silt fences which means Filter Socks dry out faster.

Since trenching is not required for installation of Compost Filter Socks, this tool may be used in a number of situations where other options such as silt fences cannot (see Suitable Applications section above).

Design and Layout

The sedimentation removal process associated with Compost Filter Socks involves both filtering and deposition from settling. This is different than other methods using only ponding for deposition of sediment, such as geotextile silt fence. Ponding occurs when water flowing to the Compost Filter Socks accumulates faster than it can flow through the Compost Filter Socks. Typically, Compost Filter Socks can handle more water than silt fences.

Compost Filter Sock Size	Application	Replacing
12" Compost Filter Socks.	standard applications	24" silt fence
8" Compost Filter Socks	flat areas where minimal protection is required	18" silt fence
18" or 36" Compost Filter Socks	severe applications	wire-backed silt fence, super silt fence, or other types of silt fence reinforced to create greater ponding area

Other design considerations are as follow:

- *Level Contour:* Place Compost Filter Socks on level contours to assist in dissipating flow into sheet flow rather than concentrated flows. Do not construct Socks that concentrate runoff or channel water. Sheet flow of water should be perpendicular to the Compost Filter Socks at impact and relatively un-concentrated.

- *Flat Slopes:* When possible, place Compost Filter Socks at a 5' or greater distance away from the toe of the slopes in order for the water coming from the slopes to maximize space available for sediment deposit. When this 5' distance is not available due to construction restrictions, a second row of Compost Filter Socks may be required.

- *Flow around ends:* In order to prevent water flowing around the ends of Compost Filter Socks, the ends of the Compost Filter Socks must be constructed pointing upslope so the ends are at a higher elevation. Be sure to stake the ends of the Socks to prevent movement during high flow events.

- *Vegetation:* For permanent areas, seeded Compost Filter Socks allow vegetation to be established directly in the sock and immediately in front and back of the sock at a distance of five feet. Vegetation on and around the Compost Filter Socks will assist in slowing down water for filtration. The option of adding vegetation will be at the discretion of the Engineer. No other soil amendments or fertilizer are required for vegetation establishment.

- *Slope Spacing & Drainage Area:* Maximum drainage area to, and slope spacing between Compost Filter Socks is dependent on: rainfall intensity and duration used

for specific design/plan, slope steepness, and width of area draining to the Compost Filter Socks. Online design tools have been researched, developed, and are readily available online (see references) to accurately design a plan based on your site and climate conditions.

- *Dispersing flow:* Sheet flow and runoff should not exceed height of Compost Filter Socks capacity in most storm events. If overflow of the Socks is a possibility, larger Socks should be constructed, or other possible sediment control tools may be used. Alternatively, a second set of Socks may be constructed or used in combination with compost blankets to prevent sediment from moving.

Construction

- Compost Filter Socks should be installed parallel to the base of the slope or other affected area, perpendicular to sheet flow.
- In extreme conditions (i.e., 2:1 slopes), or when sheet flows to the area from a parcel above the work zone, a second sock shall be constructed at the top of the slope in order to dissipate flows. (See sock size indications in the drainage chart attached.)
- If the Compost Filter Socks is to be left as a permanent filter or part of the natural landscape, it may be seeded at time of installation for establishment of permanent vegetation.
- Compost Filter Socks may be used in direct flow situations within runoff channels not exceeding 3 feet in depth. Normally, 18" or 24" Compost Filter Socks should be used.
- Staking can be installed in upslope facing U or a down slope facing V. Be sure to follow manufacturer instructions such as those in reference section.

Materials

- *Composted product:* Compost used for Compost Filter Socks shall be weed free and derived from a well-decomposed source of organic matter.
  - The compost shall be produced using an aerobic composting process meeting CFR 503 regulations, including time and temperature data indicating effective weed seed, pathogen and insect larvae kill.
  - The compost shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products are not acceptable.
  - Test methods for the items below should follow USCC TMECC guidelines for laboratory procedures:

- PH – 5.0-8.0 in accordance with TMECC 04.11-A, "Electrometric pH Determinations for Compost"

- Particle size – 99% passing a 2" sieve and a minimum of 60% greater than the 3/8" sieve, in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification". *(Note- in the field, product commonly is between ½" and 2" particle size)*

- Moisture content of less than 60% in accordance with standardized test methods for moisture determination

- Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.

- *Netting:*

  - 5 mil continuous, tubular, HDPE 3/8" knitted mesh netting material, or

  - More durable polypropylene is recommended for projects over 6 months.

- Pneumatic blower device or equivalent

Costs

Average cost ranges from $1.50 - 3.50 per lineal foot installed including installation, inspection, and maintenance

Inspection and Maintenance

- Compost Filter Socks should be regularly inspected to make sure they hold their shape and are producing adequate flow through
- If ponding becomes excessive, and sediment reaches the top of the Socks, additional Socks should be added in the areas without disturbance of soil or collected sediment
- Collected sediment should be remove from the base of the Socks when it reaches 1/2 of the exposed height of the Socks
- When construction is completed on site, the Socks may be dispersed onsite with a loader, rake, bulldozer or other device to be incorporated in the soil or left on top of the soil for final seeding to occur
- The mesh netting material will be collected and disposed of in normal trash container or removed by the Contractor. In cases where biodegradable or photodegradable products are used, they can be left on

References

- Caltrans Landscape Architecture compost specifications: http://www.dot.ca.gov/hq/LandArch/policy/compost_specs.htm.
- Filtrexx Standard Specifications and Design Manual, July 2007, Version 6.0 US Patent 7,226,240. Available at www.filtrexx.com.
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- Faucette, B., K. A. Sefton, A. M. Sadeghi, and R. A. Rowland, 2006. Sediment and nutrient removal from storm runoff with compost filter socks and silt fence. 2006 American Society of Agricultural and Biological Engineers Annual International Conference. Portland, OR.

- Faucette, B, F. Shields, and Kurtz. 2006. Removing storm water pollutants and determining relations between hydraulic flow-through rates, pollutant removal efficiency, and physical characteristics of compost filter media. Second Interagency Conference on Research in Watersheds, 2006 Proceedings. Coweeta Hydrologic Research Station, NC.