

Mission:

The Buck's County Conservation District's mission is to provide for the wise use, management, and development of the County's natural resources. This is accompanied with the cooperation of public agencies, private groups and individuals.

References:

"A Guide to Developing an Effective E&S Pollution Control Plan for Small Projects" - Franklin County Conservation District, May 2016

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"Erosion & Sediment Pollution Control Plan Guide for Small Projects"—A Publication of the Southeast Association of CD's, 1992

"Erosion and Sedimentation Pollution Control Plan Guide for Small Projects"—Berks County Conservation District, July 2000

"Erosion and Sedimentation Pollution Control Plan Guide for Small Projects"—Dauphin County Conservation District, July 1994

"Erosion Control and Conservation Plantings on Noncropland"—Penn State University College of Agricultural Sciences, 1997

"Erosion and Sediment Pollution Control Program Manual—PA Department of Environmental Protection, Division of Waterway, Wetlands and Erosion Control, March 2000

North American Green Erosion Control Blanket Installation Details

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"Underground Utility Line Construction Typical Erosion & Sediment BMP's—PA Department of Environmental Protection, Bureau of Watershed Management, August 1, 2001

Bucks County Soil Survey

BUCKS COUNTY CONSERVATION DISTRICT



A Guide to Developing an Effective Erosion and Sediment Pollution Control Plan



for Small Projects

May 2019

1456 Ferry Rd # 704, Doylestown, PA 18901

Ph: (215)- 345-7577

Fax: (215)-345-7584

Website: www.bucksccd.org

Email: gschatschneider@bucksccd.org

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“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic, and esthetic values of the environment. Pennsylvania’s public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.”

Article I, Section 27 of Pennsylvania’s Constitution

Intermittent Stream - a natural channel or drainage ditch with defined bed and banks but with only occasional (seasonal and/or after a runoff event) flows.

O. C. - On Center. Spacing of stakes from center of one stake to center of another stake.

Perennial Stream - a natural channel with defined bed and banks and continuous year-round flows from surface runoff and groundwater sources (for example, spring seeps).

R-3 stone - Stones with a graded rock size of minimum 2”, maximum 6” diameter and average diameter of 3”.

Silt Fence - a woven geotextile fabric attached to stakes and firmly trenched into the ground that acts as sediment-barrier by allowing runoff to filter through while dropping out the sediment before discharging into a waterway or offsite.

Slope (or grade) - change in elevation (rise) over a given horizontal distance (run) normally given as a percentage.

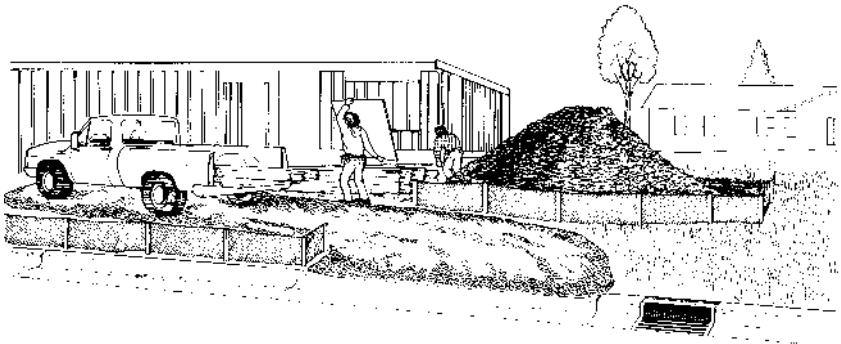
Waterbar - a compacted berm constructed across a roadway to direct runoff off of the roadway to a stable vegetated area or other sediment control.

Watercourse - a channel or conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

Watershed - the area of land from which groundwater and runoff from rain storms and melting snow drain into a stream or other waterbody.

Waters of the Commonwealth - Rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed waters, wetlands, ponds, springs and other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

Wetlands - areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs and similar areas.



Glossary of Commonly-Used Erosion Control Terms

AASHTO #1 stone - Stones with diameters from 2 1/2" to 4".

AASHTO #57 stone - Stones with diameters from 1/2" to 1".

Acre = 43,560 square feet (208.7 feet X 208.7 feet).

BMPs - acronym for Best Management Practices - erosion & sediment controls such as silt fence, strawbale barriers, sediment traps, and permanent grass cover.

Broad-based Dip - a low point cut across an access road to divert sediment-laden runoff from the roadway to a stable vegetated area or other sediment control.

Buffer or Filter Strip - a grassy or wooded strip of land along a stream or waterbody left undisturbed for the purpose of filtering sediment-laden runoff before it enters a stream or other waterbody.

Clearing & Grubbing - the act of removing trees and other vegetation, including the stumps and roots, from an area.

Collector Channel - a swale and/or berm constructed downslope of a disturbed area to collect sediment-laden runoff and convey it to a sediment trap.

Contour - a line connecting points of the same elevation on a topographic map.

Compost Filter Sock - a type of contained compost filter berm. They consist of a biodegradable or photodegradable mesh tube filled (typically using a pneumatic blower) with a coarse compost filter media that meets certain performance criteria

Crowned Roadway - a roadway or driveway graded so that the center is higher than either side to provide drainage of runoff from the roadway to the road shoulder.

DEP - acronym for the Department of Environmental Protection – a state agency.

Diversions Channel - a swale and/or berm constructed upslope of a disturbed area to convey (divert) upslope stormwater runoff around the disturbed area and discharge it to a stable undisturbed area.

Erosion Control Blanket - a rolled mat constructed with straw, coconut fibers, or curled wood shavings and held together with a plastic netting which is rolled out and stapled onto a slope or the inside of a channel to hold grass seed in place. Temporary erosion control blankets are biodegradable and disintegrate within a few months once the grass has become well-established.

Floodplain - the land adjacent to a river or stream which has been or could be expected to be inundated by a flood resulting from a 100-year storm event.

Floodway - the area of the floodplain required to carry the discharge from a 100-year storm event. Where no FEMA mapping has been completed, it is assumed to be 50 feet back from the top of bank.

INTRODUCTION

The purpose of this guide is to give you step-by-step guidance in developing an Erosion and Sediment Pollution Control (E&S) Plan for the construction of your single family residential lot or other small grading project. Conservation District plan approval may be required by your local municipality to issue a building permit or by the Conservation District upon receipt of a complaint. The Commonwealth's Title 25 Chapter 102 Erosion and Sediment Control Regulations require that all persons conducting earth disturbance activities implement and maintain Best Management Practices (BMPs) to protect, maintain, and restore water quality within our state's waterways and wetlands. Sediment is the #1 pollutant in Bucks County Pennsylvania's waterways. For earth disturbance of 5,000 square feet (0.115 acres) or more a written E&S plan detailing the BMPs to be used must be developed and made available on site at all times. In High Quality (HQ-CWF) or Exceptional Value (EV) watersheds any disturbance requires a written E&S plan.

This guide is intended only for small, low hazard projects that:

- **disturb less than 1 acre (43,560 sq. ft.) over the life of the project**
- **disturb slopes less than 15%**
- **Provide at least a 50' wide undisturbed buffer along all streams or other watercourse (unless otherwise approved)**
- **do not disturb hydric soils (indicative of potential wetlands)**
- **have an up hill offsite drainage area of less than 1 acre.**
- **propose permanent grades less than 8 feet in cut/fill depth**
- **do not involve industrial or commercial land use**

If your project does not conform to the above criteria, please consult with a professional plan preparer for assistance in developing your plan.

WHAT IS SOIL EROSION?

Erosion is a natural process by which the surface of the land is worn away by water, wind or chemical action. Accelerated erosion is the removal of the surface of the land through the combined action of human activities and natural processes at a rate greater than would occur from natural processes alone.

IS SEDIMENT REALLY A POLLUTANT?

A certain amount of erosion and sediment occurs naturally. Because it is a natural process, nature is able to assimilate naturally occurring sediments without permanent adverse effects. Adverse effects most often result from accelerated erosion due to earth disturbance activities such as surface mining, agricultural plowing and tilling, construction and timber harvesting operations.

WHY IS SEDIMENT POLLUTION HARMFUL?

- Fish have gills which extract oxygen from the water. These gills can become clogged when the water transports excessive amounts of sediment.
- Sediment can cover fish eggs and the gravel nests they rest in.
- Sediment can destroy the food supply for many species of fish by covering aquatic insect habitat on the stream bottom.
- Sediment clouds the water and deprives plants of light needed for photosynthesis. This is thought to be the primary cause of the widespread die-off of aquatic vegetation in the Chesapeake Bay.
- Sediment may carry other pollutants such as heavy metals, pesticides and excess nutrients that are spread by water action and cause problems not only at the source, but also downstream.
- Sediment loads in our waterways often result in eroded and unstable streambanks.
- Sediment increases public drinking water treatment costs or may render unfiltered drinking water supplies harmful for consumption.
- Excess sediment clogs culverts, increases flooding in streams and rivers, and may necessitate the dredging of a reservoir or other body of water.

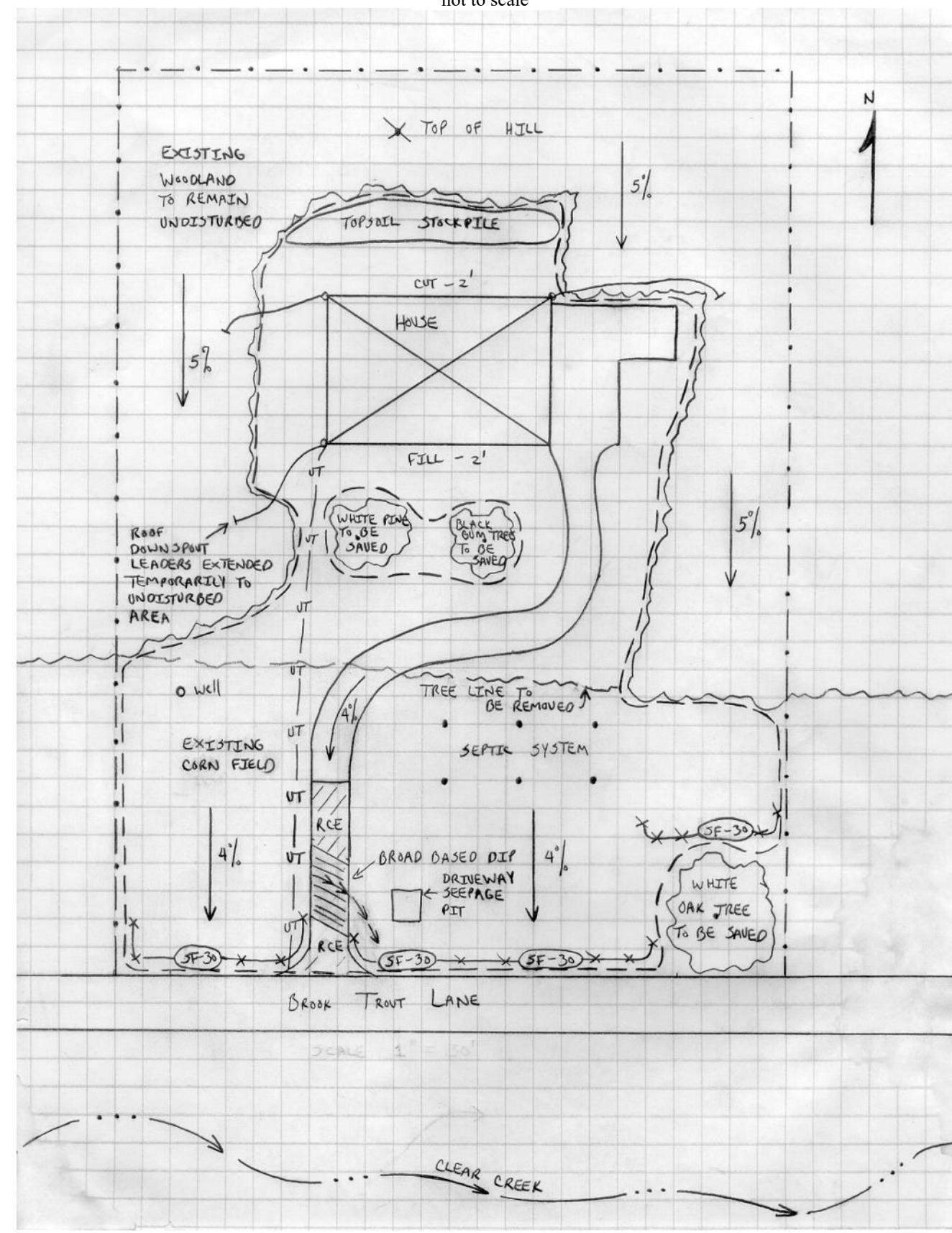
Guidelines for Developing & Implementing an Effective E&S Control Plan

When developing an E&S plan keep in mind the goal is to develop an effective and *practical* plan that you and/or your contractor can readily implement in the field and easily maintain during construction. The foremost goal of your E&S plan should be to minimize accelerated erosion and deposition of sediment into waterways, roadways and onto neighboring properties down slope of your earth disturbance activity. Here are several common-sense guidelines to consider in developing and implementing an environment-friendly and contractor-friendly E&S plan:

- 1) **Protect streams, drainage ditches, wetlands, and other bodies of water.** Make it a priority to avoid grading or other earthmoving within at *least* 50 feet of a waterway. Preserve natural vegetated buffers. Riparian (streamside) buffers serve as sediment filter strips, provide important wildlife habitat, stabilize streambanks, and provide shade that cools stream temperatures for trout and other cold water aquatic life. Clearly mark or flag off these critical areas to keep construction equipment out. Diligently maintain all BMPs in these environmentally-sensitive areas. Secure required permits for any work proposed within a wetland or within at least 50 feet of a stream. When in doubt contact the Conservation District or the DEP South Central Regional Watershed Mgmt. office (phone # 717-705-4802) to request a site meeting.
- 2) **Avoid disturbing steep slopes.** Steep slopes are difficult to stabilize and present a danger to equipment operators. Avoid excessive cutting which can alter the groundwater system and expose spring seeps and unstable soils. Improperly compacted fill can be highly erosive and unstable. Practice proper site grading. Avoid road grades in excess of 10%. Excavated driveways often collect dirty runoff from the construction site causing sediment to be deposited onto roadways, neighboring driveways, and streams. Construct properly-spaced waterbars or broad-based dips on long sloping driveways to direct water off of the roadway which slows the speed of runoff by reducing the length of slope. Provide a cross slope or crown (1/2" to 3/4" per foot) the center of the driveway.
- 3) **Minimize the extent and time of disturbance.** The more land area that is disturbed and the longer it remains exposed, the greater the potential for erosion and sediment problems. Allow undisturbed areas where work is not occurring to remain undisturbed for as long as possible especially over the winter months. Seed and mulch or otherwise stabilize areas on an on-going basis. Always seed and mulch immediately upon completion of final grade. Apply a stone base to the entire length of your driveway the same day it is excavated.
- 4) **Keep clean water clean.** When possible and prior to disturbing any earth install a *stabilized* temporary diversion channel on the up hill side of the project to divert additional offsite stormwater runoff around or away from the areas to be disturbed. This will reduce the amount of stormwater runoff flowing over disturbed ground, result in less mud in the work area, and decrease the need (and cost) for more extensive BMPs on the downslope side of the project. When constructing a temporary diversion berm or channel or otherwise redirecting runoff, be mindful of where it will discharge to. The outlet needs to be non-erosive and if flowing onto a neighboring property a stormwater easement will need to be obtained from the property owner. To keep roof runoff clean and avoid creating gullies in your newly seeded lawn, temporarily attach rain leaders (flexible pipe) to the roof downspouts and extend the pipe to a stable area such as well-established lawn or a storm drain until the grass becomes well established.
- 5) **Provide for a clean stabilized access to the site.** Avoid tracking mud onto state and township roadways which frequently results in complaints to the Conservation District. Use AASHTO #1 (PA #4 stone) with underlying geotextile fabric to keep muddy ground from mixing with clean

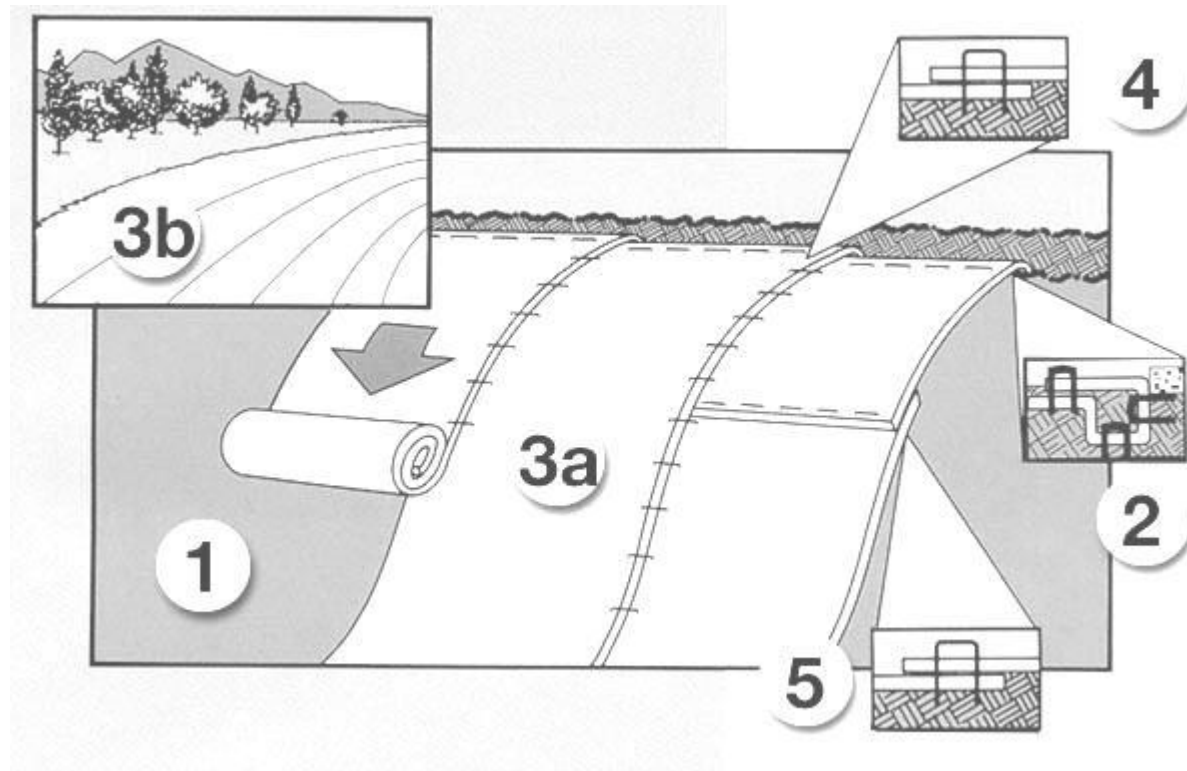
Sample Plan Drawing

not to scale



Erosion Control Blanket Slope Installation

(Always use the manufacturer's installation instructions when provided)



1. Prepare soil before installing blankets, including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the blanket in a 6" deep X 6" wide trench with approximately 12" of blanket extended beyond the up-slope portion of the trench. Anchor the blanket with a row of staples/stakes approximately 12" apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to compacted soil and fold remaining 12" portion of blanket back over seed and compacted soil. Secure blanket over compacted soil with a row of staples/stakes spaced approximately 12" apart across the width of the blanket.
3. Roll the blankets (a) down or (b) horizontally across the slope. Blankets will unroll with appropriate side against soil surface. All blankets must be securely fastened to soil surface by placing staples/stakes. Place staples/stakes equally spaced 3 feet apart (5 staples per square yard).
4. The edges of parallel blankets must be stapled with approximately 2" - 5" overlap depending on blanket type.
5. Consecutive blankets spliced down the slope must be placed end over end (shingle style) with an approximate 3" overlap. Staple through overlapped area, approximately 12" apart across entire blanket width.

Note : In loose soil conditions, the use of staple or stake lengths greater than 6" may be necessary to properly secure the blankets.

stone. Clean up mud tracked onto roadways as soon as you become aware of it. Avoid using water which can freeze or otherwise create slippery conditions on roadways. *Make sure that all driveway and highway occupancy permits (HOP) have been acquired from Penn DOT and/or the local municipality before beginning your work.*

- 6) **Locate BMPs along the downslope perimeter of all areas to be disturbed.** *All runoff flowing over or through disturbed and/or exposed areas must pass through a BMP (ex. silt fence, sediment trap) prior to discharging offsite or into a stream, wetland, storm drain or other waterway. This is required by Section 102.4(b)(1). Silt fence and other BMPs located along the down slope perimeter of your lot and away from your immediate work area will ensure that you capture all of the sediment-laden runoff. This will also result in less maintenance and repair due to equipment and vehicles running over silt fence and construction debris and clumps of soil pushing the silt fence down. It will also give you and/or your contractor the room to complete the job without silt fence getting in the way.*
- 7) **Properly install the proposed E&S BMP's shown on your plan prior to disturbing any earth.** *If clearing and grubbing of trees and brush is necessary to install BMPs such as silt fence, clear only as much as is needed before clearing the remainder of the wooded or brushy areas. Make sure the BMPs (ex. silt fence) are properly installed according to the manufacturer's instructions. Improperly installed BMPs, such as silt fence running up and down a slope actually create erosion and sediment problems rather than solve them. If your project is located near a stream, make sure your well-driller is aware of the Chapter 102 regulations and is using BMPs to keep flow from the drilling operation from entering any ditches, streams or wetlands.*
- 8) **Save existing native trees, shrubs, and other vegetation.** *A good stand of existing vegetation is the most effective and economical means of preventing soil erosion problems. A good sod can be up to 98% effective in controlling erosion. Saving trees can be highly desirable to reduce erosion, avoid costs of planting new trees, enjoy instant shade, provide wind protection for your home, supply valuable wildlife food and nesting cover, and preserve a bit of the predevelopment natural setting. Native tree and shrub species with desirable landscape characteristics (for example, oaks, black gum, red maple, flowering dogwood, serviceberry, mountain laurel, etc.), having wildlife value, of rare occurrence, and trees with healthy well-developed crowns should be selected for protection. Mature trees have been shown to increase property values by as much as 12% (PSU). In wooded areas the ground does not freeze solid over the winter which allows beneficial rainfall and melting snow to soak into the ground and recharge wells rather than create runoff problems. Desired trees and shrubs should be marked and roped off limits to all construction activity along the tree's entire drip line (area from the trunk to the end of the outermost branches in the tree's crown). Soil compaction from construction equipment, root and bark damage, filling around the base of the tree, and dumping of construction wastes often will result in decreased vigor and the death of selected trees. For more information on preserving trees see "A Guide to Preserving Trees in Development Projects" available from PSU Cooperative Extension.*
- 9) **Save the topsoil.** *This is required by Chapter 102 Section 102.22 The topsoil should be stripped from only those areas to be immediately cut, filled, or otherwise graded. Temporarily stockpile the topsoil for revegetating disturbed areas upon completion of your project. Seed and mulch the topsoil stockpile to keep it from washing away. When the site is at final grade the stockpiled topsoil should be uniformly redistributed over all disturbed areas to a minimum depth of 6". This is key to achieving a quick grass cover on unfertile, disturbed areas and will reduce stormwater runoff and require less fertilizers and other chemicals to achieve a healthy, well-established lawn.*
- 10) **Schedule your earth disturbance activities during the growing season.** *Attempt to time your project during the growing season. Permanent grass seedlings will become better*

established and in a shorter period of time during the spring and early fall when temperatures and rainfall are optimal for growth of cool-season grasses. Projects completed during late fall or winter will require additional maintenance of BMPs until the disturbed areas can be permanently stabilized the following spring.

11) Inspect & maintain BMPs. *This is required by Section 102.4(b)(5)(X).* Silt fence fills with sediment and gets knocked down by equipment. Rivulets turn into gullies. Grass seed and straw wash away. Once BMPs are installed they must be inspected at least weekly and after every runoff event and cleaned out or repaired immediately. Immediately backfill utility trenches and repair any affected silt fence, channels, or other BMPs. Install an erosion control blanket wherever runoff concentrates to form rills and/or gullies.

12) Permanently stabilize or temporarily stabilize all disturbed areas. Established vegetation is the most practical and effective erosion control practice. Upon final grading, *immediately* spread topsoil, seed, straw-mulch, lime, and fertilize all disturbed areas. Conduct a soil test to determine lime and fertilizer needs (available from Penn State Cooperative Extension). Select seed mixtures adapted to your site's conditions (pg. 10 & 11). Areas that have been disturbed typically are acidic and infertile thereby requiring more soil amendments (lime and fertilizer). Hay or straw mulch is the preferred method of mulching because it shields soil particles on the ground from the impact of falling raindrops (the first step in the erosion process), prevents the soil surface layer from sealing, keeps valuable moisture from evaporating, insulates the ground, and shelters young grass seedlings from wind and the scorching summer sun. Straw-mulch should be applied at 3 tons per acre, about 140 pounds per 1,000 square feet. Straw should be loosely spread, completely covering exposed soil. Tack the straw down to keep it from blowing away. When work has temporarily stopped (for example, over the winter months), seed with a temporary seed mix, such as annual rye grass or winter rye, and straw mulch the area. Disturbed areas may also be wood-mulched, stoned, or paved. All proposed grass-lined channels and areas of concentrated runoff (rills or gullies) should be lined with wood excelsior blanket, straw net, or adequately-sized rock. Slopes or embankments with a slope steeper than 3:1 (i.e. more than one foot of vertical rise for every 3 feet of horizontal ground distance) should have an erosion control blanket installed. *Permanent stabilization is required by Chapter 102.22.*

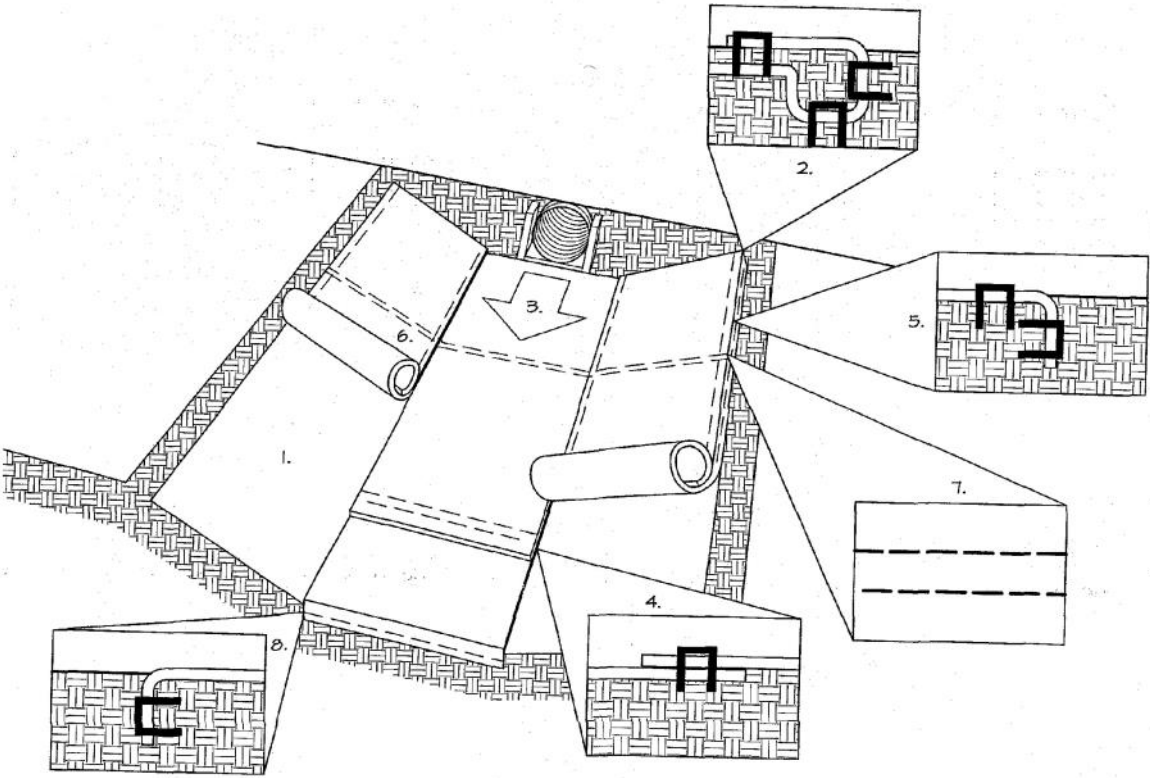
13) Install dry well, rain gardens, retentive grading in order to help reduce the amount of storm water and improve water quality

14) Remove BMPs and properly recycle or dispose of construction waste.

Once all disturbed areas achieve a minimum uniform 70%, well-established, perennial vegetation, or have been stoned or paved, the BMPs should be removed and areas disturbed by their removal stabilized. All construction wastes, including silt fence, should be recycled or properly disposed of in accordance with DEP Solid Waste Management regulations. No construction wastes should be burned, dumped, buried, or discharged on the site.

Erosion Control Blanket Channel Installation

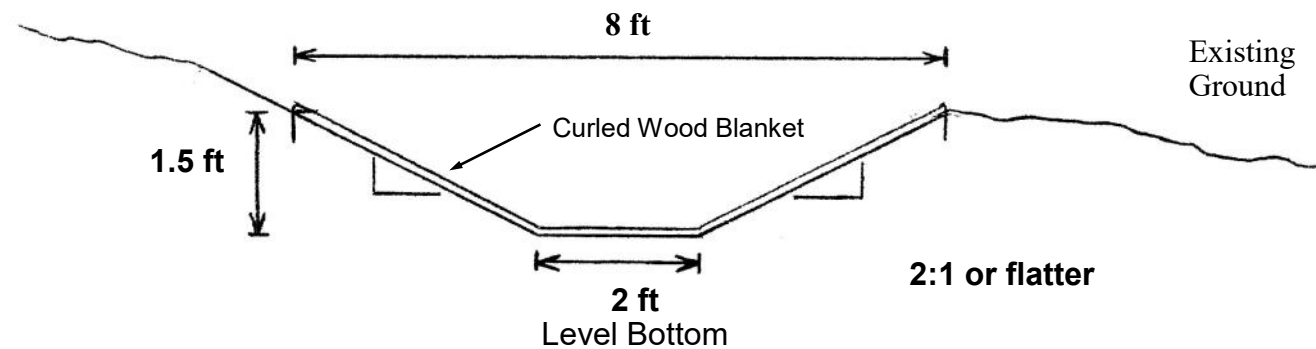
(Always use the manufacturer's installation instructions when provided)



1. Prepare soil before installing blankets, including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the blanket in a 6" deep X 6" wide trench with approximately 12" of blanket extended beyond the up-slope portion of the trench. Anchor the blanket with a row of staples/stakes approximately 12" apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to compacted soil and fold remaining 12" portion of blanket back over seed and compacted soil. Secure blanket over compacted soil with a row of staples/stakes spaced approximately 12" apart across the width of the blanket.
3. Roll center blanket in direction of water flow in bottom of channel. Blankets will unroll with appropriate side against the soil surface. All blankets must be securely fastened to soil surface by placing staples/stakes. Place staples/stakes equally spaced 3 feet apart (5 staples per square yard).
4. Place consecutive blankets end over end (shingle style) with a 4" - 6" overlap. Use a double row of staples staggered 4" apart and 4" on center to secure blankets.
5. Full length edge of blankets at top of side slopes must be anchored with a row of staples/stakes approximately 12" apart in a 6" deep X 6" wide trench. Backfill and compact the trench after stapling.
6. Adjacent blankets must be overlapped approximately 2" - 5" (depending on blanket type) and stapled.
7. The terminal end of the blankets must be anchored with a row of staples/stakes approximately 12" apart in a 6" deep X 6" wide trench. Backfill and compact the trench after stapling.

Notes : Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface. In loose soil conditions, the use of staple or stake lengths greater than 6" may be necessary to properly anchor the blankets.

**Temporary Diversion Channel
Cross Section Detail**
(for drainage areas less than or = 2 acres)



Construction Specifications

- 1) Diversion channel(s) must be located up slope of all proposed disturbed areas and must have positive uninterrupted grade (minimum 2%) over the entire length of the channel.
- 2) Diversion channels must outlet to an undisturbed stable area and not create erosion at the outlet or offsite stormwater problems. Diversion Channels may not outlet onto adjacent properties without written permission of the affected property owners.
- 3) Minimum 2% channel grade (bed slope) and maximum 9% channel grade.
- 4) Any fill material used in the construction of the channel must be properly compacted with earthmoving equipment.
- 5) The channel shall be graded so as to be free of rocks, tree roots, stumps or other projections that would impede normal channel flow. The channel shall be initially overexcavated 6" to allow for the placement of topsoil.
- 6) Immediately spread topsoil, seed, lime and fertilize per the permanent stabilization specifications on pages 10-11 and install a temporary curled wood blanket. For steeper channels or channels located in wooded areas where fallen leaves and heavy shade prohibit establishment of grass consideration should be given to use of a permanent turf reinforcement mat in lieu of a temporary curled wood blanket.

Maintenance

All channels must be kept free of obstructions such as fill ground, fallen leaves and branches, accumulated sediment and construction materials. Repair any washouts or settling. Keep mowed and free of brushy and/or woody growth. Inspect weekly and immediately after every runoff event.

DEP Fact Sheet

Commonwealth of Pennsylvania - Department of Environmental Protection

**CLUES TO WETLAND IDENTIFICATION: QUESTIONS FOR DEVELOPERS,
CONTRACTORS, SURVEYORS, FARMERS, AND LAND OWNERS**

Wetlands are areas where ground and/or surface water lingers for at least brief periods during the growing season

In Pennsylvania, wetlands are protected by both state and federal regulations and may also be protected by local (municipal) regulations or ordinances. Wetlands are valuable because they function in ways that benefit the natural world, including the human community (see DEP Fact Sheet, **Wetlands: Functions at the Junctions**).

ARE WETLANDS PRESENT ON YOUR SITE? Make a walking inventory of fields, forests and woodlots. Ask the following questions:

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Are there open bodies of water, ponds, lakes, streams or reservoirs?
<input type="checkbox"/>	<input type="checkbox"/>	Are there natural drainage channels (permanent or temporary)?
<input type="checkbox"/>	<input type="checkbox"/>	Is the ground soggy or spongy under foot at any time during the growing season?
<input type="checkbox"/>	<input type="checkbox"/>	Are there "low spots" or depressions where water lies or pools for more than seven days during the growing season?
<input type="checkbox"/>	<input type="checkbox"/>	Are swales, springs or seeps present?
<input type="checkbox"/>	<input type="checkbox"/>	Are there areas you would not cross by vehicles, tractors or other machinery for fear or "getting stuck"?
<input type="checkbox"/>	<input type="checkbox"/>	Has the site been "ditched" or "tiled" in spots to "dry it out"?
<input type="checkbox"/>	<input type="checkbox"/>	Do some plants have roots growing from their stems, above the soil line?
<input type="checkbox"/>	<input type="checkbox"/>	Do you see these plants: cattails, sedges (frequently with triangular stems) iris (flags), arrowheads, joe pye weed, touch-me-not (jewelweed), rushes, sensitive fern, ironweed or skunk cabbage?
<input type="checkbox"/>	<input type="checkbox"/>	Do you see these trees or saplings: willows, red or silver maples, box elders, black or green ash, sycamore or black gum?
<input type="checkbox"/>	<input type="checkbox"/>	Are tree trunks expanded or swollen at the base?
<input type="checkbox"/>	<input type="checkbox"/>	Are any trees "blown down" (windthrows), exposing a shallow but extensive root system?
<input type="checkbox"/>	<input type="checkbox"/>	Are there any of these shrubs present: blueberry, bush-type dogwoods (for example, red osier), alders, buttonbush or spicebush?
<input type="checkbox"/>	<input type="checkbox"/>	Do you see:
		Cleared areas where water has scoured the surface and removed the plants?
<input type="checkbox"/>	<input type="checkbox"/>	Places where fallen leaves are discolored gray or black?
<input type="checkbox"/>	<input type="checkbox"/>	Silt/sedimentation deposits on decaying leaves lying on the ground, lining plant leaves, or on stems or tree trunks?
<input type="checkbox"/>	<input type="checkbox"/>	Drift lines (wrack lines) where sticks, leaves, and other water-carried debris have lodged along a

- ☐☐
- contour or at the base of vegetation?
- ☐☐
- Is there a dark-brown layer of organic matter, over two inches thick on the soil surface?
- ☐☐
- Does sphagnum moss (a lush, green, juicy moss) cover the site?
- ☐☐
- Is the soil composed primarily of peat (decaying sphagnum moss)?
- ☐☐
- Does the soil smell like rotten eggs (sulfur)?
- ☐☐
- Digging to a depth of 18 inches, is the soil gray, gray-blue, or gray-green, or marked with spots, streaks, or lines of different color? Note: In agricultural fields these characteristics are observed below the plow line.
- ☐☐
- Does the soil test pit (a hole dug to 18 inches) fill with water or does water “trickle down the sides”?
- ☐☐

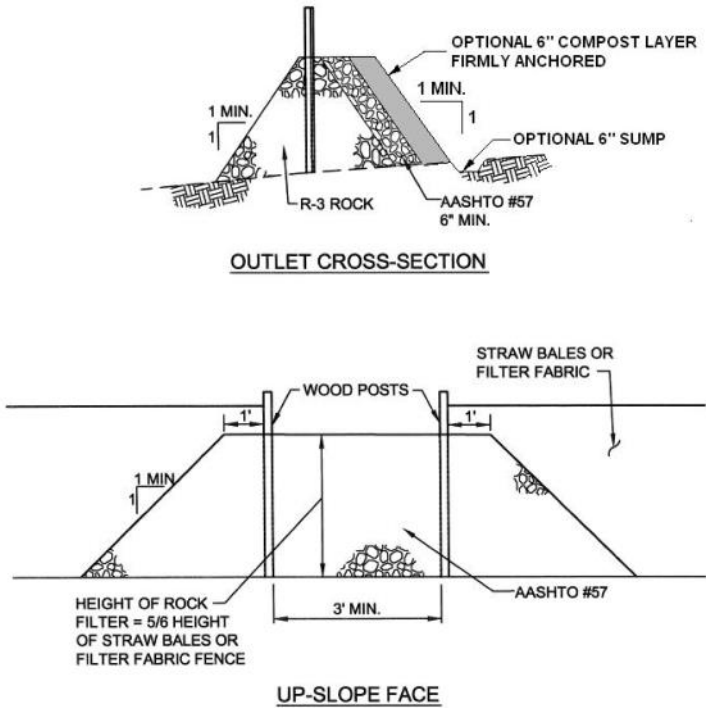
If you have answered “Yes” to any of these questions, a wetland may be present on your project site or property. Further information/assistance is available. Seek the advice of professionals. Observe! Ask questions! Be alert to changes in state and federal regulations! Be aware of local regulations/ordinances! Seek professional advice at state, federal and private levels! **It is important to note that permits are normally needed before you perform any work in a wetland.** Contact: Regional Offices of DEP Soils and Waterways Section, DEP Water Quality Protection, your local county conservation district or the Natural Resource Conservation Service.

This fact sheet and related environmental information are available electronically via the Internet, Access the DEP website at

<http://www.dep.state.pa.us>

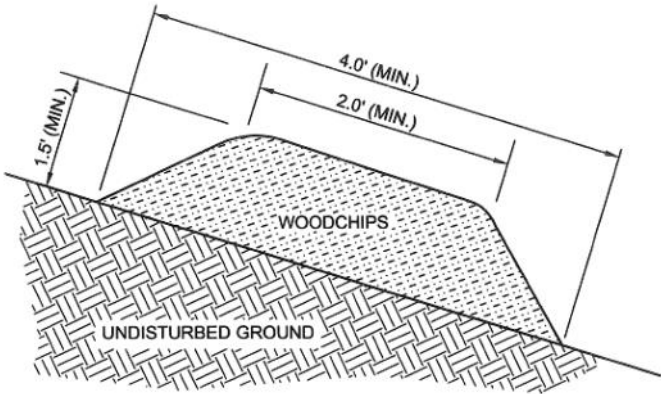


Rock Filter Outlet



A Rock Filter Outlet shall be installed where failure of a Straw Bale Barrier or Filter Fabric Fence has occurred due to concentrated flow. Sediment must be removed when accumulations reach 1/3 the height of the outlet.

Wood Chip Filter Berm



Slope - Percent	Maximum Slope Length (ft) above Wood Chip Filter Berm
2 (or less)	500
5	250
10	150
15	100

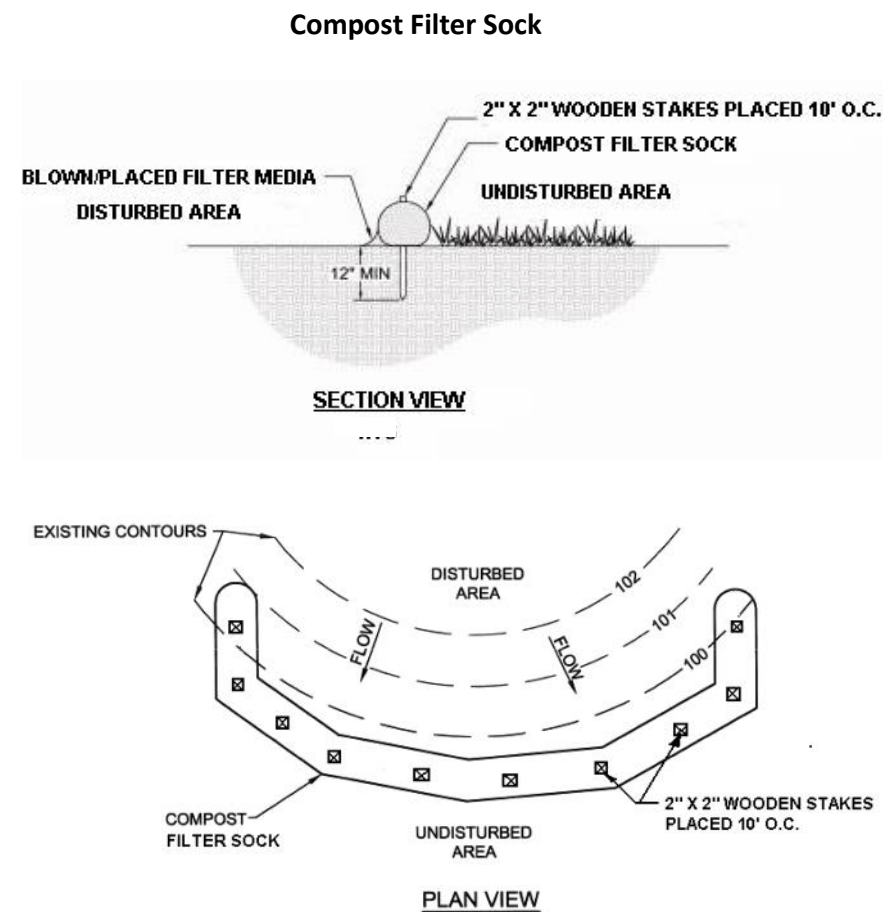
Prior to placement of the berm, obstructions such as tree limbs, large rocks, etc. shall be removed.

Wood Chip Filter Berm shall be placed at existing level grade. Both ends of the berm shall be extended at least 8 feet up slope at 45 degrees to the main barrier alignment. Wood Chip Berms may not be located in areas of concentrated flow or used to construct sediment traps or other impoundments.

A 6” thick layer of compost shall be added to the upslope side of any wood chip filter berm located in a Special Protection Watershed.

Berms shall be inspected weekly and after each runoff event. Sediment shall be removed when accumulations reach 1/2 the above ground height of the berm. Damaged or deteriorated portions of the berm shall be replaced immediately upon inspection.

Berms may be leveled when the tributary area has been permanently stabilized or left in place.



Slope - Percent	Maximum Slope Length (ft) Above Filter Sock			
	12" (min diameter) Filter Sock	18" (min diameter) Filter Sock	24" (min diameter) Filter Sock	32" (min diameter) Filter Sock
2 (or less)	500	700	1000	1300
5	250	350	500	650
10	150	250	300	400
15	100	200	250	350

Compost Filter Sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment. Maximum slope length above any sock shall not exceed that shown in table above.

Traffic shall not be permitted to cross filter socks.

Accumulated sediment shall be removed when it reaches ½ the above ground height of the sock.

Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer’s specifications or replaced within 24 hours of inspection.

Biodegradable filter sock shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer’s recommendations.

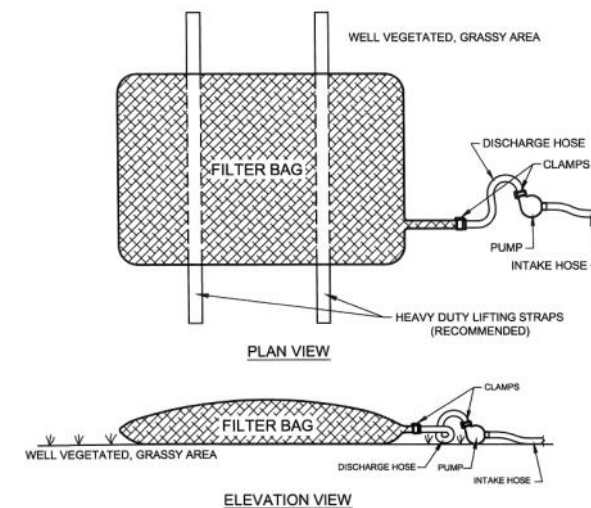
Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.

Table 1: Hydric Soils List of Bucks County

Mapping Units with Hydric Soil Componets			
Aba, AbB, AbC	Abbotstown silt loam	MaB, MbD, MbF	Manor loam
AmA, AmB, AmC	Amwell silt loam	McA, McB,	Matapeake silt loam
Bo	Bowmansville-Knauers silt loams	MdA	Mattapex silt loam
BsA, BsB	Brownsburg silt loam	MIA, MIB, MIC, MmB, MmD	Mount Lucas silt loam
BwB	Buckingham silt loam	Na	Nanticoke-Hatboro silt loams
CaB	Califon loam	NbB, NbC	Neshaminy silt loam
CbA, CbB	Chalfont silt loam	NhB, NhD, NhF	Neshaminy gravelly silt loam
CdA	Chester silt loam	NkA, NkB, NkC	Nockamixon silt loam
CmB	Clarksburg silt loam	Ot	Othello silt loams
CwA, CwB, CwxB	Croton silt loam	PeA, PeC, PeD	Penn channery silt loam
DaA, DaB	Delaware fine sandy loam	PkB, PkC, PkD, PIE	Penn-Klinesville channery silt loams
DdA, DdB	Doylestown silt loam	PnD	Penn-Lansdale complex
DfB	Duffield silt loam	RaA, RaB, RaC	Raritan silt loam
DgC	Duffield-Ryder silt loams	ReA, ReC	Readington silt loam
DuA, DuB	Duncannon silt loam	RIA, RIB, RIC,	Reaville channery silt loam
EcB, EcC	Edgemont channery loam	Ro	Rowland silt loam
EdB, EdD, EdF	Edgemont channery sandy loam	ToA, ToB, TrB	Towhee silt loam
FoA, FoB, FoC	Fountainville silt loam	Ua, UcB, UdB, UeB, UFB	Udorthents
GID, GmB, GmD, GmF	Gladstone gravelly loam	UhB	Urban land-Berks complex
GrA, GrB	Glenville silt loam	UmB	Urban land-Doylestown complex
Ha	Hatboro silt loam	UnB	Urban land-Duffield complex
HbA	Hatboro-Codorus complex	UoB, UoD	Urban land-Gladstone complex
Ho	Holly silt loam	UsB	Urban land-Lawrenceville complex
KIB, KIC, KID, KIE	Klinesville very channery silt loam	UvB	Urban land-Neshaminy complex
LfA	Lamington silt loam	Uw	Urban land-Othello complex
LkB	Lawrenceville silt loam	UxB, UxD	Urban land-Penn complex
LmA, LmB, LmC, LnB, LnD	Lehigh channery silt loam	UzcaB	Urban land-Udorthents
Lt	Linden loam	WaB	Washington silt loam

Complete Soil Survey information can be found at <http://websoilsurvey.nrcs.usda.gov/app/>

Pumped Water Filter Bag



A suitable means of accessing the bag with machinery required for disposal purposes must be provided. Filter bags shall be replaced when they become ½ full. Spare bags shall be kept available for replacement of those that have failed or are filled. It is recommended that bags be placed on straps to facilitate removal.

Bags shall be located in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile underlayment and flow path shall be provided. Bags may be placed on filter stone to increase discharge capacity. Bags shall not be placed on slopes greater than 5%. For slopes exceeding 5%, clean rock or other non-erodible and nonpolluting material may be placed under the bag to reduce slope steepness.

The pumping rate shall be no greater than 750 gpm or ½ the maximum specified by the manufacturer, whichever is less. Pump intakes should be floating and screened.

Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected.

TEMPORARY & PERMANENT STABILIZATION

Temporary Seeding and Mulching

Apply the following:

Seed:	40 lbs. per acre (1 lb per 1,000 sq.ft.) Annual Ryegrass (anytime) (or) 96 lbs. per acre (2 lbs per 1,000 sq.ft.) Spring Oats during spring months (or) 168 lbs. per acre (4 lbs per 1,000 sq.ft.) Winter Rye during fall months
Mulch & Tackifier:	Same as for Permanent Seeding and Mulching below.
Lime:	1 ton per acre ground agricultural limestone (46 lbs. per 1,000 sq. ft.)
Fertilizer:	1000 lbs. per acre 5-5-5 (23 lbs per 1,000 sq.ft.)

Permanent Seeding and Mulching

Attach and use soil test results and recommendations (preferred) before permanently seeding (or) use the recommendations below. Mulching is required for all applications. Soil tests are available from Penn State Cooperative Extension. Spring (March, April, and early May) is the best time for permanent seeding but disturbed areas can be seeded anytime from early spring to fall. Grasses generally require at least 4 to 6 weeks of growth prior to hard frosts and legume seedings need at least 10 to 12 weeks prior to hard frosts in the fall. (PSU)

Apply the following:

1) At least 6” of topsoil and rake.

2) Suggested Permanent Seed Mixtures for Lawn and Mowed Areas (PSU)

•OPEN, SUNNY LOCATIONS AND WELL-DRAINED SOILS

Southeastern Pennsylvania (south and east of South mountains)

Kentucky bluegrass 100% at 2-3 lb per 1,000 sq ft

Kentucky bluegrass 80-90%

Perennial ryegrass 10-20%

Kentucky bluegrass 40-60%

Fine fescues 30-40%

Perennial ryegrass 10-20%

Turf-type tall fescue 100%

Turf-type perennial ryegrass 100%

Other areas of Pennsylvania—all seed

Fine fescues 100%

mixtures and rates listed above or

at 4-5 lb per 1,000 sq ft

•MODERATE-TO-PARTIAL SHADE

Fine fescues 40-50%

Kentucky bluegrass 40-50%

Perennial ryegrass 10-20%

lb per 1,000 sq ft

at 4 lb per 1,000 sq ft

Fine fescues 100% at 4-5

Turf-type tall fescue 100% at 6-8 lb per 1,000 sq

ft

•HEAVY SHADE, WELL-DRAINED SOILS

Fine fescues 100%

at 4-5 lb per 1,000 sq ft

•HEAVY SHADE, POORLY-DRAINED SOILS

Rough bluegrass (*Poa trivialis*) 100%

at 2-3 lb per 1,000 sq ft

•SLOPES OR UNMOWED AREAS

Tall Fescue 75%

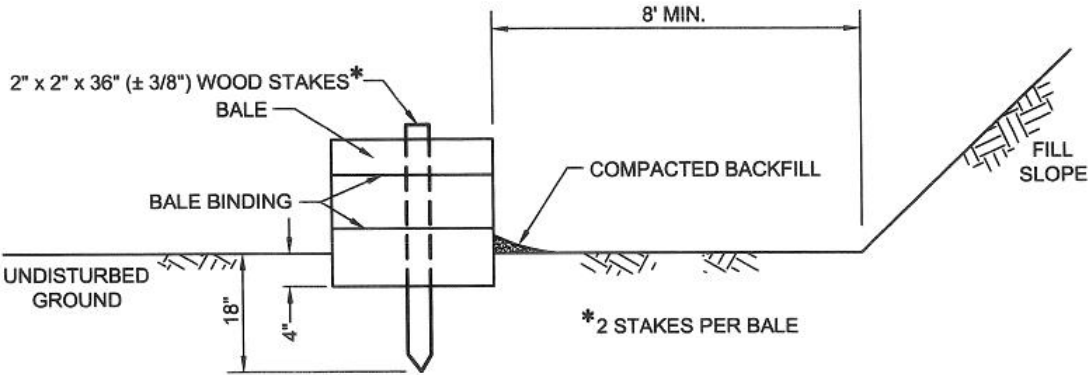
Birdsfoot Trefoil 25%

at 1.0 lb per 1,000 sq ft

* All seed mixtures given above are for 100% Pure Live Seed (PLS). To calculate PLS, the percentage of pure seed is multiplied by the percentage of germination, and the product is divided by 100. For example, take 85% pure seed X 72% germination then divide by 100 to get 61%PLS. To determine how much seed to plant, divide the percentage into 100. For example 100 divided by 61 = 1.63. 1.63 lbs. of seed will need to be planted for every pound called for above.

3) Add a nurse crop to the permanent grass mixture for rapid stabilization and shade for

Straw Bale Barrier Detail



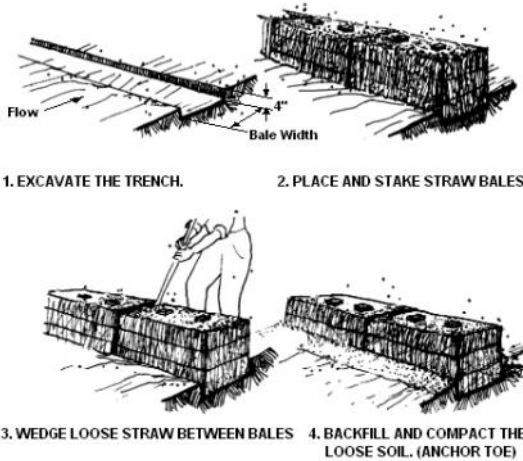
Straw Bale Barriers shall not be used for projects extending more than 3 months.

Straw Bale Barriers shall be placed at existing level grade with ends tightly abutting the adjacent bales. First stake of each bale shall be angled toward adjacent bale to draw bales together. Stakes shall be driven flush with the top of the bale. Both ends of the barrier shall be extended at least 8 feet up slope at 45 degrees to the main barrier alignment.

Compacted backfill to extend approximately 4 inches above ground level.

Sediment shall be removed when accumulations reach 1/3 the above ground height of the barrier. Damaged or deteriorated bales shall be replaced immediately upon inspection.

Any section of Straw Bale Barrier which has been undermined or topped shall be immediately replaced with a Rock Filter Outlet (See page 25).

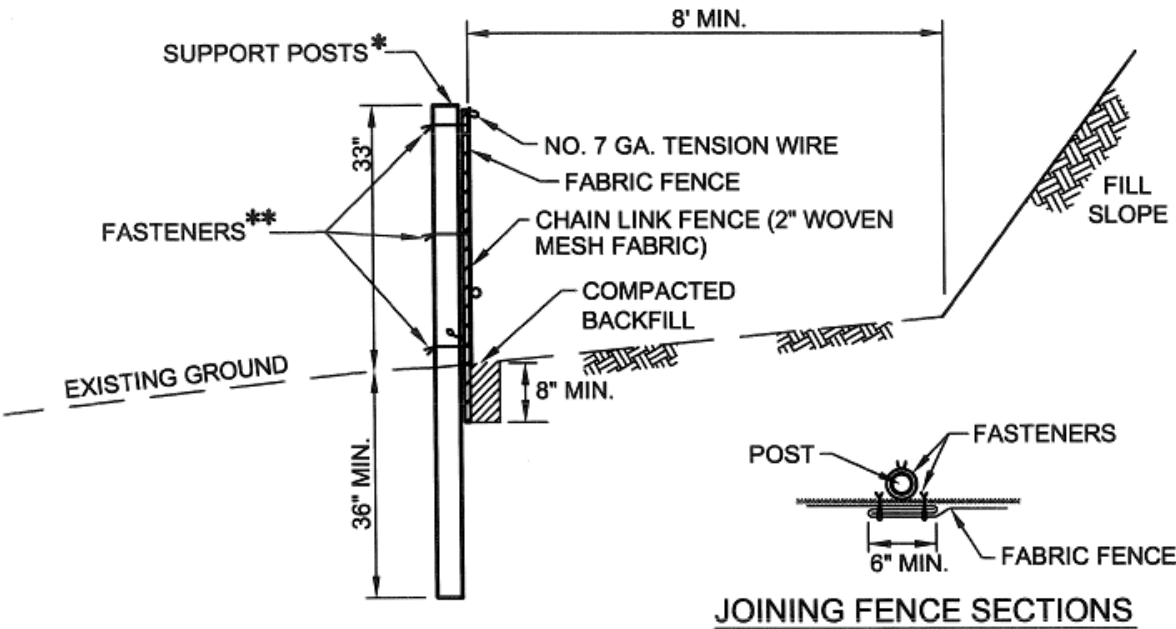


Maximum Slope Lengths for Straw Bale Barriers

Slope - Percent	Maximum Slope Length (ft) Above Barrier
2 (or less)	150
5	100
10	50
15	35

See Restrictions for use (same as for silt fence) on page 20.

Super Silt Fence Detail



*POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

**CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

Filter Fabric width shall be 42" minimum.

Posts shall be installed using a posthole drill.

Chain Link shall be galvanized No. 11.5 Ga. steel wire with 2 1/4" opening, No. 11 Ga. aluminum coated steel wire in accordance with ASTM-A-491, or galvanized Bi, 9 Ga. steel wire top and bottom with galvanized No. 11 Ga. steel intermediate wires. No. 7 Ga. Tension Wire installed horizontally through holes at top and bottom of chain-link fence or attached with hog rings at 5' (max.) centers.

Filter Fabric Fence must be placed at existing level grade. Both ends of the barrier must be extended at least 8 feet upslope at 45 degrees to main barrier alignment.

Sediment must be removed when accumulations reach 1/ 2 the above ground height of the fence.

Maximum Slope Lengths for Super Silt Fence

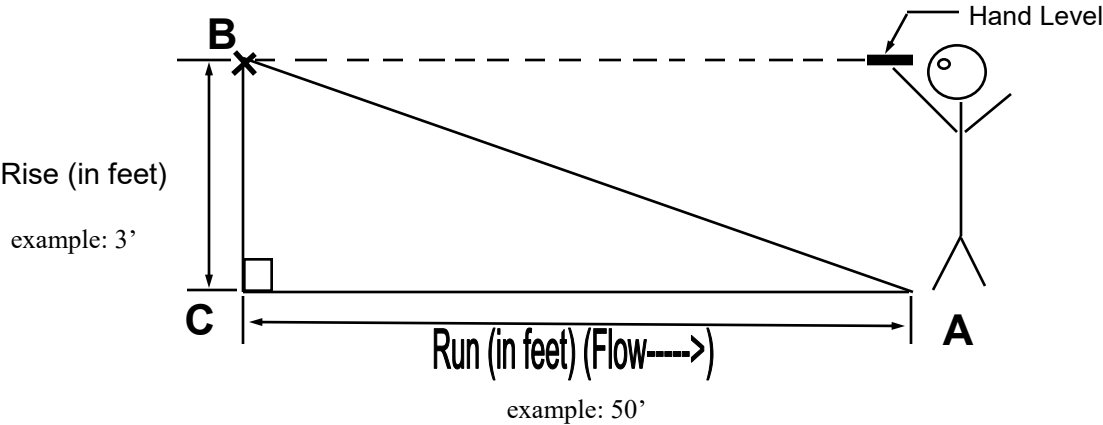
Slope Percent	Maximum Slope Length (ft)
2 (or less)	1,000
5	500
10	300
15	250

- establishment of permanent grasses.
- Annual ryegrass 5 lbs. per acre (0.12 lbs per 1,000 sq. ft.)
 - Spring Oats 64 lbs. per acre (1.5 lbs per 1,000 sq. ft.)
 - Winter Rye 56 lbs. per acre (1.3 lbs per 1,000 sq. ft.)

- 4) Mulch & Tackifier:
- 3 tons per acre (140 lbs. per 1,000 sq. ft.) clean straw or hay mulch. Straw or hay mulch may be anchored to the ground with application of 800 to 1000 lbs. per acre of cellulose fiber sprayed over the mulch. Mulch may also be held in place by commercial netting or crimped into the soil with the use of a heavy tractor-drawn disk harrow with the blades set straight. Straw mulching is the preferred method of mulching.
- 5) Lime: In absence of soil test, 4 tons per acre ground agricultural limestone (184 lbs. per 1,000 sq. ft.)
- 6) Fertilizer: In absence of soil test, 1,000 lbs. per acre 10-20-20 (23 lbs. per 1,000 sq. ft.)

How do I determine the slope of my property?

Slope is measured in Percent (%). **Slope (%) = (Rise ÷ Run) X 100**



Easy Way to Find Approximate % Slope

1. Hold a hand level at eye's height and see where level hits the Ground (point B).
2. Measure Distance in feet from point A to point B, this will give you your approximate Run.
3. Rise is the height (in feet) from the ground to your eye level, or distance from point C to point B.
4. % slope equals Rise divided by Run, multiplied by 100.

example = (3'/50') X 100 = 6% slope

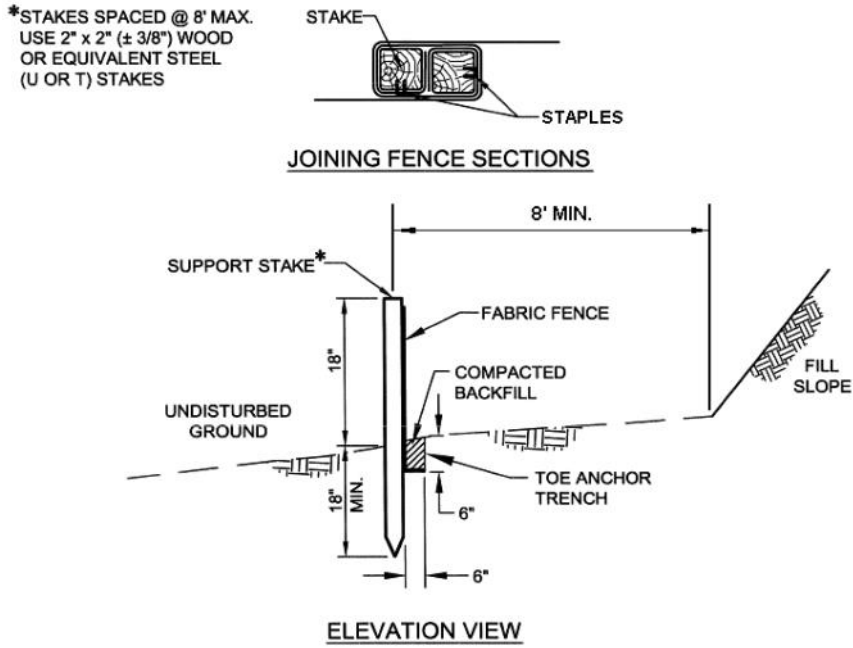
STEP-BY-STEP INSTRUCTIONS

1) Remove the white insert (pages 15-18).

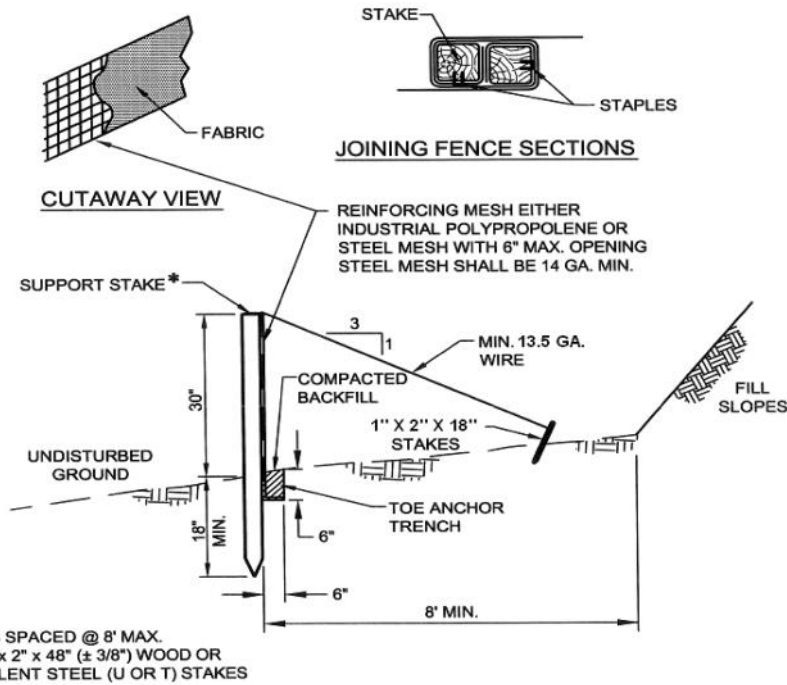
Pages 16 & 17 – Use #2 pencil or colored pencils! If you need assistance contact the BCCD to schedule an office appointment or an on site meeting.

- 2) Refer to the “Sample Plan Drawing on page 29 for help in developing your plan.
- 3) In the spaces provided show the correct scale (must be 1”= 50’ or larger), the north directional arrow, and the soil types occurring within the property boundaries and within 50’ of your lot. Soil type information may be found in the Bucks County Soil Survey, on perc tests, and on the land development or subdivision plans. **The Soil Survey can be accessed on the web at <http://websoilsurvey.nrcs.usda.gov/app/>.**
- 4) Compare the soil types found on your lot with the Hydric Soils List of Bucks County – Table 1 on page 9. If potential hydric soils occur on your lot contact the Conservation District. Hydric soils are indicative of potential wetlands. See “Clues to Wetland Identification” on pages 7 and 8. **If you propose to disturb areas in or immediately adjacent to wetlands this guide may not be used.**
- 5) Clearly draw the location of any *existing* features including public roadways, stoned access, underground utility lines, and woods/tree lines.
- 6) Clearly draw the locations of the lot boundaries, house footprint, driveway, rock construction entrance, septic system, well, and proposed underground utility lines (ex. electric, phone, gas, cable).
- 7) Clearly draw the location of the existing drainage features including any existing culvert pipes, existing ditches or channels on your lot, and draw slope arrows (see legend) showing the approximate % grade and direction of runoff flow for all slopes. **See page 11 to determine the slope of your property.** Percent slope or existing contours may be found on subdivision or land development plans, on perc tests or field-determined using a clinometer, Locke level or transit level. Show which direction the driveway is sloping and the percent slope.
- 8) Show the length of any up slope areas and/or pipes or channels discharging onto your lot. Show the nearest top of hill(s) and the distance to the top of hill (in feet).
- 9) Clearly draw the limits of disturbance around the entire area to be disturbed including areas for construction of the house, garage, septic system, driveway, utilities, and lawn. If your lot is currently an idle crop field or is overgrown with undesirable vegetation and weeds place the limits of disturbance around the entire lot boundary since these areas will likely be disturbed to prepare a seedbed for making lawn.
- 10) Clearly draw the location of and label the temporary topsoil stockpile location.
- 11) Clearly draw the location of any existing trees to be saved and the proposed woods edge (if applicable).
- 12) Indicate the location of any significant proposed grading with “CUT” for areas to be cut/excavated and “FILL” for areas to be filled. For example, CUT-4 would indicate cutting 4 feet.
- 13) Clearly draw the location of any proposed stormwater management facilities required by the local municipality (for example, stormwater drainage channels along the lot boundary and/or around the house, retention ponds, driveway and/or roof runoff infiltration pits).
- 14) Clearly draw the location the proposed sediment control BMPs (ex. silt fence, silt sock, straw bale barrier) along the downhill edge of the area to be disturbed (use legend symbols on pages 16 & 17). *See the maximum slope lengths and other restrictions for using silt fence on pages 20 - 25.* The slope length is

Standard Silt Fence (18” High)



Reinforced Silt Fence (30" High)



Slope - Percent	Maximum Slope Length (ft) Above Fence	
	18" High Fence	30" High Fence*
2 (or less)	150	500
5	100	250
10	50	150
15	35	100

Erosion and Sediment Control Measures for Geothermal and Water Wells

An excavated shallow trench, 10 to 15 feet long, should be provided immediately downgrade of the well to allow for well cuttings and solids to drop out of flow. The downstream edge of the trench should be level to allow water to spill out uniformly over the entire length of the trench. A semi-circle of silt fence, or straw bales should be installed downgrade of the trench for further sediment removal.

From the trench, overland flow should be directed as sheet flow across a thickly vegetated area. This vegetated filter must conform to slope requirements discussed for vegetative filter strips in the E&S Manual. As indicated, a minimum of 50 feet of vegetated terrain must be available between the trench and the nearest down slope water conveyance. If adequate vegetation is not available downgrade of the well site, or if the minimum distance to water conveyance is less than 50 feet refer to DEP Fact sheet, “Erosion and Sediment Control BMPs Water Well Drilling and Aquifer Testing”.

Silt Fence

Silt Fence May Not be Used:

- 1. Where the slope length above the silt fence exceeds the maximum allowable.
- 2. Across or below areas of concentrated flows such as ditches, channels, and entrances to/outfalls of culvert pipes.
- 3. In areas where rock or rocky soils prevent the full and uniform anchoring of the fence toe.
- 4. On uncompacted fill or extremely loose soils.
- 5. Where site layout does not allow for placement on level grade.
- 6. In multiple rows on a continuous slope.

Installation & Maintenance

Filter fabric fence must be installed at existing level grade. Both ends of each fence section must be extended at least 8 feet upslope at 45 degrees to the main fence alignment.

Silt fence ends (stakes & fabric) need to wrapped at least one complete turn.

Sediment must be removed where accumulations reach 1/2 the above ground height of the fence.

Any fence section which has been undermined or topped must be immediately replaced with a rock filter outlet (see page 25).

Silt Fence Fabric properties—at a minimum, the fabric shall have the following properties:

Fabric Property	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lb)	120	ASTM D1682
Elongation at Failure (%)	20% Max	ASTM D1682
Mullen Burst Strength (psi)	200	ASTM D 3786
Trapezoidal Tear Strength (lb)	50	
Puncture Strength (lb)	40	ASTM D 751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Size	30 US Std. Sieve	CW-02215
Ultraviolet Radiation Stability (%)	80	ASTM G-26

measured from the top of the hill or nearest channel (whether onsite or offsite) down to the proposed location of the silt fence. A diversion channel may need to be constructed up slope of the proposed disturbed area to reduce the slope length to the silt fence.

- 15) Draw the location of the silt fence *on level existing grade* (i.e. parallel to the contour lines or perpendicular to the slope arrow direction) using the appropriate symbol provided in the legend. Show the end sections of the silt fence turned upslope at a 45° angle.
- 16) For lots with driveways sloping towards a public roadway, waterway, or wetland show a temporary broad-based dip directing the driveway runoff into a sediment trap, silt fence, or strawbale barrier.
- 17) Show permanent broad-based dips properly spaced (see page 19) for permanent gravel driveways constructed on slopes.
- 18) Circle the BMPs to be used in the “Construction Sequence” Stage 5 on page 16. If you are seeking E&S plan approval from the Conservation District proceed to #19, otherwise you are finished! The Clean Streams Law provides for up to \$10,000 per day in civil penalties for violations of Chapter 102, so remember to fully implement the E&S plan and keep a copy of the plan on site at all times!
- 19) Make a **legible** photocopy of pages 15-18 and submit it to the Conservation District with a \$200 check payable to “**Bucks County Conservation District.**” Keep your original copy in case the Conservation District requests changes to the plan you submitted.

Submit any photographs of your lot and immediate surrounding area that you feel may be helpful to the plan reviewer (not required).

- 20) The Conservation District has 30 business days to review the plan. *Please refrain from calling the Conservation District to inquire about the status of your plan as this will delay the approval of your plan.* If the plan has significant deficiencies, a letter will be sent to you listing the deficiencies that need to be resolved before the plan can be approved. If the plan is adequate to meet the requirements of the Commonwealth’s Chapter 102 Erosion & Sediment Control regulations, a stamped copy of the plan along with an approval letter will be sent to you and your local municipality.



Table 3.1 Stream Name and Chapter 93 Stream Designation

Table 3.1 Stream Name and Chapter 93 Stream Designation					
Stream Name	Classification	Aquatic Life	Stream Name	Classification	Aquatic Life
1-Delaware River	WWF	MF	2-Neshaminy Creek		
2-UNT to Delaware River			Main Stream, Confluence of W&N Branches	TSF	MF
Basins, Lehigh River to Pidcock Creek	TSF	MF	3- UNT tributaries to Neshaminy Creek		
2-UNT 03333 to Delaware River	HQ-CWF	MF	Basins, Confluence of West and North Branches to Proposed PA 614 Dam to Mouth	TSF	MF
2-Frya Run	HQ-CWF	MF	3-Coks Run	WWF	MF
2-Cooks Creek	EV	MF	3-Mill Creek	TSF	MF
2-Gallows Run	CWF	MF	3-Country Club Creek	WWF	MF
2-Tinicum Creek	EV	MF	2-Neshaminy Creek		
3-Rapp Creek			Non-Tidal Portion of Main Stem, Proposed PA 614 Dam to Mouth	WWF	MF
Basin, 50ft Upstream of T453 Bridge (Quarry Road)	HQ-CWF	MF	3-UNT to Neshaminy Creek		
3-Rapp Creek			Non tidal portions of basins, proposed PA 614 Dam to Mouth	WWF	MF
Basin, 50ft Upstream of T453 Bridge to Confluence Beaver Creek	CWF	MF	3-Little Neshaminy Creek	WWF	MF
3- Beaver Creek			3-Mill Creek		
Basin, Source to Confluence with Rapp Creek	HQ-CWF	MF	4-Lahaska Creek	CWF	MF
2-Tohickon Creek			4-Watson Creek	CWF	MF
Nockamixon Dam Basin, Lake	TSF	MF	3-Mill Creek		
2-Tohickon Creek			Basin Confluence of Lahaska Creek	WWF	MF
Nockamixon Dam to Deep Run	CWF	MF	3-Newtown Creek	WWF	MF
3-Deep Run	WWF	MF	3-Core Creek		
2-Tohickon Creek			Basin, Source to Inlet of Lake Luxembourg	CWF	MF
Basin, Deep Run to Mouth	CWF	MF	Lake Luxembourg	TSF	MF
2-Hickory Creek	TSF	MF	4-UNT to Lake Luxembourg	CWF	MF
2-Paunacussing Creek	HQ-CWF	MF	3-Core Creek		
2-Cuttalossa Creek	HQ-CWF	MF	Basin, Lake Luxembourg Dam to Mouth	WWF	MF
2-Rabbit Run	TSF	MF	3-Mill Creek		
2-Aquetong Creek	HQ-CWF	MF	Basin	WWF	MF
2-Dark Hollow Run	TSF	MF	1-Delaware Estuary	WWF	MF
2-Pidock Creek	WWF	MF	2-UNT to Delaware Estuary	WWF	MF
2-UNT to Delaware River			2-Poquessing Creek	WWF	MF
Basin, Pidcock Creek, to Head of Tide	WWF	MF	2-Pennypack Creek		
2-Jericho Creek	WWF	MF	Basin, Source to US 13 Bridge, Non-tidal portion	TSF	MF
2-Houghs Creek	WWF	MF	Non-Tidal Portions of Basin, US 13 Bridge to Mouth	WWF	MF
2-Dyers Creek	WWF	MF	1-Delaware Estuary		
2-Buck Creek	WWF	MF	Tidal Portions of Basin	WWF	MF
1-Delaware Estuary	WWF	MF	2-UNT to Delaware Estuary		
2-UNT to Delaware Estuary	WWF	MF	Non tidal portions of basins, to Big Timber Creek	WWF	MF
2-Martins Creek	WWF	MF	2-Frankford Creek	WWF	MF
2-Levittown Lake	TSF	MF	1-Delaware Estuary		
2-Mill Creek	WWF	MF	Tidal Portions of Basin, Big Timber Creek (NJ) to Philadelphia-Delaware County Border	WWF	MF
2-Neshaminy Creek			2-UNT to Delaware Estuary		
3-West Branch	WWF	MF	Basins, Big Timber Creek, to Philadelphia-Philadelphia Delaware County Border	WWF	MF
3-North Branch			1-Delaware Estuary		
Basin, Source to Tailwaters of Lake Galena	WWF	MF	4-Unami Creek	HQ-TSF	MF
Basin, Lake Galena	WWF	MF			
Basin, Lake Galena Dam to Confluence with West Branch	TSF	MF			

HQ AND EV STREAMS IN PA:

Aquetong Creek– Basin– **HQ/CWF**
Beaver Creek- Basin, Source to confluence W/Rapp Creek—**HQ**
Cooks Creek– Basin– **EV**
Cuttalossa Creek– Basin– **HQ/CWF**
Fryarun– Basin– **HQ/CWF**
Paunnacussing Creek– Basin– **HQ/CWF**
Rapp Creek– Basin, Source to 50ft up-stream of Quarry Rd, Bridge (T453) - **HQ/CWF**
Beaver– Trib to Tinicum- **EV**
Schmoutz Creek– Basin– **HQ/TSF**
Tinicum Creek– Basin– **EV**
Unami Creel– Basin– **HQ/TSF**

EV—Exceptional Value **HQ-CWF**—High Quality Cold Water Fishery **CWF**—Cold Water Fishery
TSF—Trout Stocked Fishery **WWF**—Warm Water Fishery **UNT**—Unnamed Tributary To
MF—Migratory Fishes

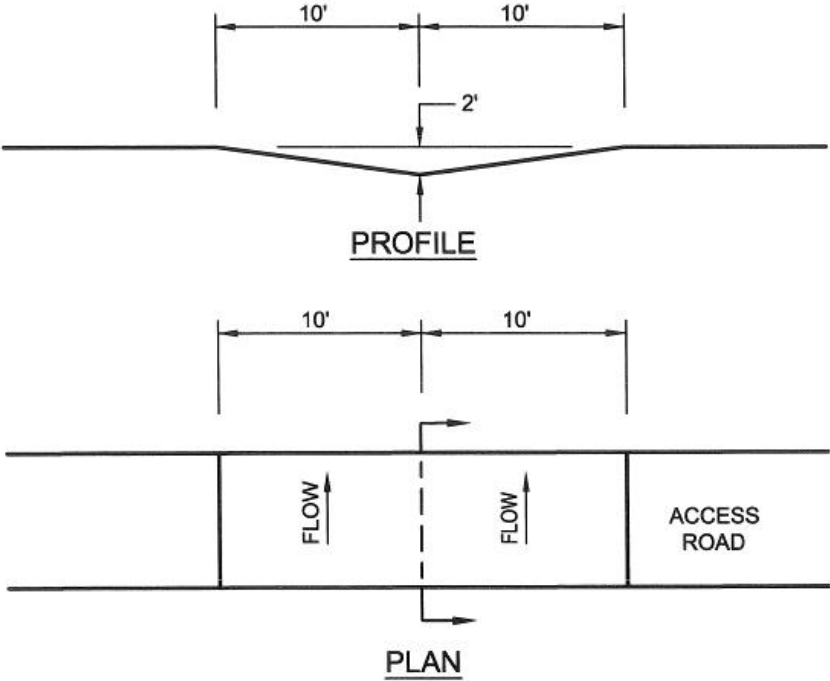
Broad-Based Dip Details

Broad-Based Dip for Low Gradient (<5%) Roadways

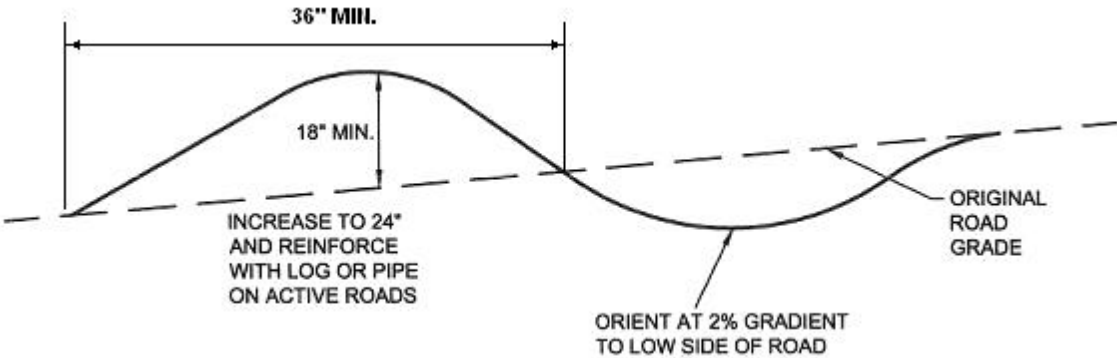
Spacing of Broad-Based Dips, Open-Top Culverts and Deflectors

Road Grade (Percent) Spacing Between Dips, Culverts, or Deflectors (feet)

< 2	300
3	325
4	200
5	180
6	165
7	155
8	150
9	145
10	140



Water bar



Waterbars shall be inspected weekly (daily on active roads) and after each runoff event. Damaged or eroded water bars shall be restored to original dimensions within 24 hours of inspection.

STANDARD NOTES

The erosion and sediment pollution control plan shall be available on-site at all times during the earth disturbance activity and until all disturbed areas are permanently stabilized.

The contractor will be responsible for the removal of any excess material and make sure site(s) receiving the excess has an erosion & sediment control plan that meets the conditions of Chapter 102 and/or other State and Federal regulations.

All building materials and wastes must be removed from the site and recycled or disposed of in accordance with the Department’s Solid Waste Management Regulations at 25 Pa. Code 260.1 et. seq., 271.1 et. seq., and 287.1 et. seq. No building materials shall be burned, buried, dumped, or discharged at the site.

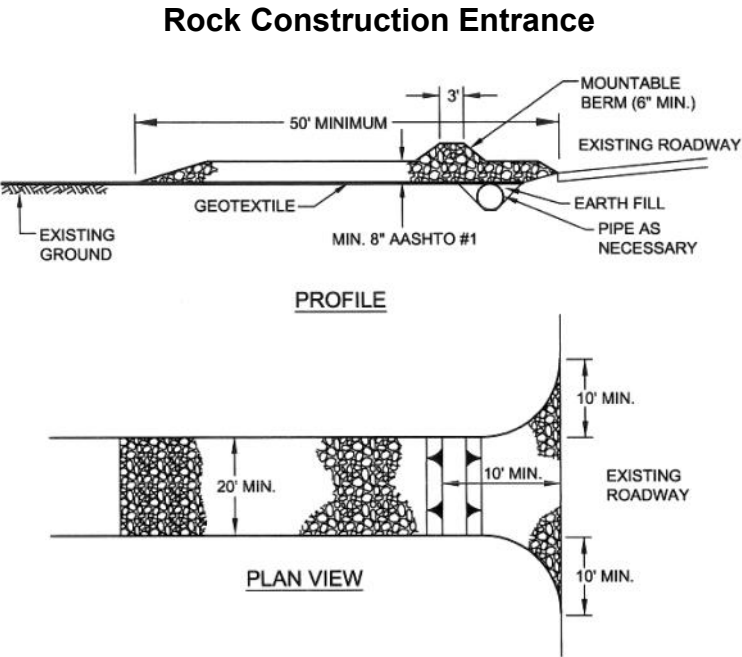
Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices to eliminate the potential for accelerated erosion and/or sediment pollution.

All pumping of sediment laden water shall be through a sediment control BMP, such as a pumped water filter bag or equivalent sediment removal facility, over undisturbed vegetated areas.

Clean Fill is defined as: Uncontaminated, non-water soluble, non-decomposable, inert, solid material. The term includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and is recognizable as such. The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized. (The term “used asphalt” does not include milled asphalt or asphalt that has been processed for re-use.).

MAINTENANCE PROGRAM

Until the site is permanently stabilized, all erosion and sediment control BMPs must be properly maintained. Maintenance must include inspections of all erosion and sediment control BMPs after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, re-grading, reseeding, re-mulching and re-netting must be performed immediately. If erosion and sediment control BMPs fail to perform as expected, replacement BMPs or modifications of those installed will be required.



A rock construction entrance needs be provided at all locations where construction traffic will be accessing a paved roadway. A geotextile filter cloth shall be placed under the AASHTO #1 rock. Adding additional rock to the rock construction entrance during its use is usually required to maintain its effectiveness. At the end of each construction day, all sediment deposited on paved roadways should be removed and returned to the construction site. The rock construction entrance must remain in place and be maintained until construction traffic access is no longer needed and the access point is blocked to prevent vehicle movement or paved.

E&S APPLICATION / GENERAL INFORMATION FORM

This form must be completed and submitted along with the required plans and fees for both first time E&S reviews and resubmissions. PLEASE SUBMIT FOLDED PLANS TO THE DISTRICT. **ROLLED PLANS WILL NOT BE ACCEPTED.**

Project Municipality_____ Project Name_____

Tax Parcel Number _____ Project Address_____

*TOTAL ACREAGE_____ *ACRES TO BE DISTURBED _____ #Lots _____ #Units _____
*(Do not use square feet. Square feet divided by 43,560 = Total Acres)

Watershed _____ Receiving Stream _____

Chapter 93 Designation _____ (see Table 3 – pg. 14) Distance to Stream: _____

Applicant Name _____ Applicant Company _____

Applicant Address _____

Applicant City/State/Zip _____

Applicant Phone _____ Applicant Email _____

Submitted By: Engineering Firm/Plan Designer Contractor Landowner Municipality

Engineer Name: _____ Engineering Company _____

Engineer Address: _____

Engineer City/State/Zip _____

Phone# _____ Email Address _____

Plan Date OR Most Recent Revision Date: _____ **NEW PLAN RESUBMISSION**

ADMINISTRATIVE INCOMPLETE INFO ONLY (\$250.00 RE-FILE FEE) NPDES MINOR AMENDMENT (\$250.00 FEE)

INCLUDED WITH SUBMISSION ARE: PLANS/NARRATIVES FEE(S) NPDES/E&S PERMIT APPLICATION

****FEE SCHEDULE FOR E&S REVIEWS (BASED ON *DISTURBED ACRES ONLY*)****

SINGLE FAMILY HOME (1 RESIDENCE) WITH UNDER 1 ACRE OF DISTURBANCE = \$200.00

ALL OTHER EARTH DISTURBANCE:

.02296 to 0.99 acres = \$650.00
1.0 to 1.99 acres = \$1,350.00
2.0 to 4.99 acres = \$2,000.00
5.0 to 9.99 acres = \$3,000.00
10.0 to 19.99 acres = \$5,000.00
20+ acres = \$6,000.00 +
Additional \$100.00 per acre for each acre over 20
(Fractions of an acre are rounded up to the next whole acre.)

TIMBER HARVEST
0.0-24.99 ACRES = \$200.00; ≥25.0 ACRES = E&S PERMIT
E&S PERMIT
≥25.0 ACRES = \$650 (PLUS FEES ASSOCIATED WITH NPDES INDIVIDUAL PERMIT, SEE PAGE 2, “NPDES INFORMATION”)
SMALL POND WORK E&S FEE = \$200.00 (MAY REQUIRE NPDES PERMIT, SEE PAGE 2, “NPDES INFORMATION”)
****FOR PROJECTS WITH EARTH DISTURBANCE OF ONE (1) ACRE OR MORE IT IS REQUIRED THAT AN NPDES APPLICATION (NOI) BE SENT WITH THE E&S SUBMISSION.**
****PLEASE READ PAGE 2 OF THIS APPLICATION UNDER “EXEMPTIONS AND EXCEPTIONS”**

BCCD USE ONLY BEYOND THIS POINT

ENTRY # _____

E&S FEE REC'D \$ _____ CHECK# _____

EXPEDITED FEE\$ _____ CHECK# _____

NPDES FEE \$ _____ CHECK# _____

DATE SENT BACK _____

DEP CWF FEE \$ _____ CHECK# _____

P&H FEE \$ _____ CHECK# _____

NPDES # ASSIGNED _____

CONSTRUCTION SEQUENCE

Each stage must be completed and immediately stabilized prior to starting subsequent stages. BMP's shall be installed in the locations shown on the accompanying drawing and installed per the attached construction details on pages 18-27.

- 1) Install the rock construction entrance.
- 2) Field mark/fence off existing trees to be protected during construction.
- 3) Clearly field mark the boundaries of any & all wetlands, floodways, buffer strips, springs, steep slopes and other critical areas to remain undisturbed.
- 4) Install any diversion channels and immediately install the temporary lining per the manufacturer's instructions.
- 5) **Install the sediment control BMP's along the downslope perimeter of the disturbance prior to any earth disturbance within the drainage area of the intended BMP's—This includes BMPs for any proposed well drilling.** Minimize disturbance by only clearing and grubbing the vegetation necessary for installation of the BMP's. **Circle the BMP's to be utilized:**

- 18" Standard Silt Fence

30" Reinforced Silt Fence

Super Silt Fence (chainlink)

Strawbale Barrier

Wood Chip Berm
- Water bar

Diversion Channel(s)

12", 18", 24", 32" Compost Filter Sock

Broad-based Dip(s)

- 6) Immediately stabilize the BMP's and the areas disturbed by their installation per the permanent stabilization specifications.
- 7) Begin excavation for the remainder of the driveway. For driveways sloping towards a public roadway, excavate only what will be stoned by the end of each working day. Provide a cross slope or crown the center (1/2" to 3/4" per foot) of the driveway and install any broad-based dips to direct runoff off of the driveway. Immediately permanently stabilize all graded driveway and public roadway embankments.
- 8) Strip topsoil from the building site and immediate work area only. Stockpile topsoil in the location shown. Temporarily seed and straw-mulch the stockpile.
- 9) Proceed with building construction and site improvements. Temporarily seed and mulch any disturbed areas where work ceases. When roof downspouts (without infiltration pits) are installed, temporarily extend the spout (with flexible pipe) to a stable undisturbed area.

The total length of utility trenches open should not exceed that which can be backfilled and stabilized or plugged at the end of each working day. Any BMP's damaged by utility trench excavation will be repaired and stabilized immediately.

- 10) During favorable growing conditions finish grade, replace a minimum uniform 6" of topsoil, and immediately apply lime, fertilize, seed, straw-mulch, and tackifier per the permanent stabilization specifications or soil test recommendations. Do not disturb outside the limit of disturbance shown on the drawings.

All disturbed slopes steeper than 3:1 and all areas of concentrated flows must have an erosion control blanket installed.

- 11) **Maintain and repair all BMP's immediately after every runoff event and on a weekly basis throughout construction and until all disturbed areas are permanently stabilized (i.e. at least a uniform 70%, well-established, perennial vegetative cover).**

- 12) Upon permanent stabilization remove and properly dispose of/recycle any silt fence, construction wastes, and/or other BMP's. Permanently stabilize areas disturbed by removal of the BMP's.



Know what's below.
Call before you dig.

Erosion & Sediment Pollution Control Plan
See step by step instructions on pages 12 & 13

North arrow:

