



# NMDOT

# Erosion & Sediment Control Field Guide

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*Best Management Practices for Construction Phase  
Temporary Erosion and Sediment Control  
2024 Edition*



New Mexico DEPARTMENT OF  
**TRANSPORTATION**  
MOBILITY FOR EVERYONE

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## Note to Reader:

The New Mexico Department of Transportation (NMDOT) created this Field Guide to provide a handy reference for inspection and installation of erosion and sediment controls commonly built during the construction of roadways. Some of these measures may remain in place to become permanent features.

For additional information about Storm Water Pollution Prevent Plan (SWPPP) compliance and construction phase temporary erosion and sediment control, please contact:

Roadside@dot.nm.gov

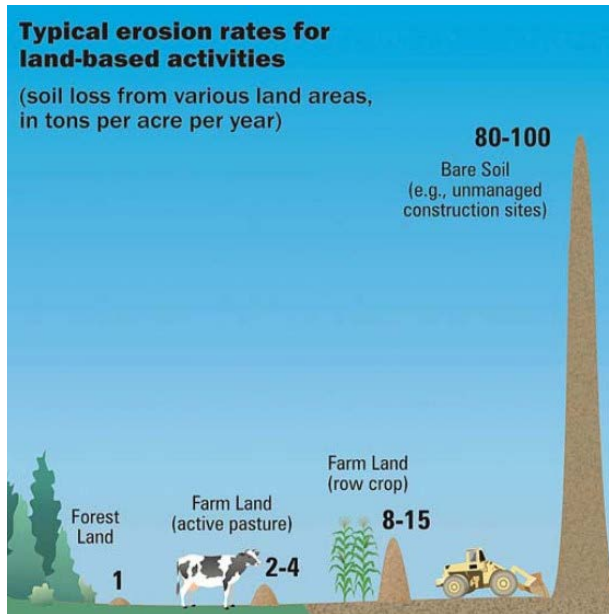


## Background

### Roadway Construction and Stormwater Quality

NMDOT roadway projects require detailed planning, thoughtful design, responsible construction practices, and diligent inspection and maintenance of all erosion and sediment controls to meet the water quality requirements of federal, state and local agencies.

NMDOT construction projects typically disturb the natural vegetative cover, impact slopes and drainage patterns, and can result in higher volumes of runoff and accelerated rates of soil erosion and sediment transport. Stormwater runoff from construction activities is a primary source of soil erosion and sediment. Sediment is a source of pollution if not



Source: Dunne, T. and L. Leopold, 1978; NRCS, 2000; NRCS, 2006; ASCE and WEF, 1992



controlled, and also carries pollutants like oils and chemicals that contaminate waterways.

This field guide provides guidance on common construction-phase erosion protection and sediment controls that are required to help prevent, reduce and/or mitigate the potentially harmful effects of construction pollutants in stormwater runoff. Frequent inspections of control measures are important to help ensure that Best Management Practices (BMPs) are properly installed and maintained.

Erosion control should always be addressed first. Sediment control is a secondary measure. Erosion control reduces the amount of soil transported by runoff and wind as a result of construction

disturbance. Sediment control captures the soil that has been eroded before it leaves the construction site. Effective implementation of erosion and sediment control BMPs will reduce maintenance and prevent potential sediment discharges.



There should never be a gap between the ground and the bottom of a mulch sock

## Permitting Requirements Regulatory Information

An NPDES General Permit for Discharges from Construction Activities, often referred to as the **Construction General Permit (CGP)**, is required for all construction projects that are one acre or larger. If a project smaller than one acre is part of a larger development that exceeds one acre, it must also be covered by a CGP. The CGP coverage is issued by the EPA. The goal of the CGP program is to keep sediment and other pollutants generated from construction sites out of lakes, rivers, streams, and wetlands. For details on the CGP, visit the EPA's website and the NMDOT's National Pollutant Discharge Elimination System Manual (see QR codes at right).



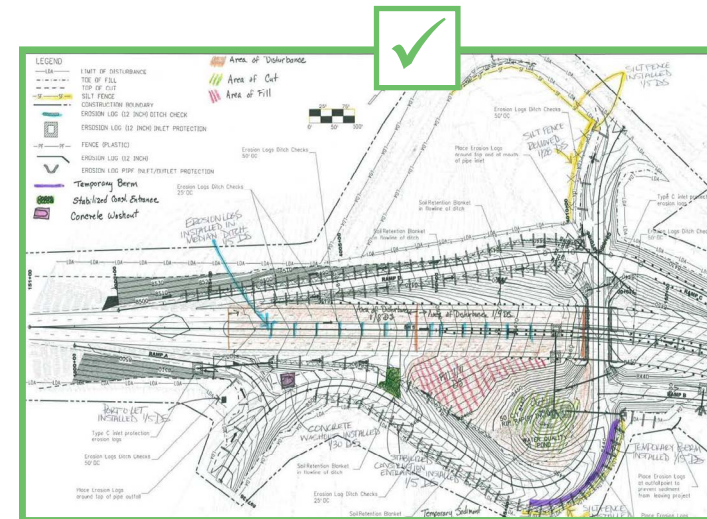
QR Code for the  
EPA CGP



QR Code for  
NMDOT NPDES  
MANUAL  
See Appendix A

## Key CGP Requirements

- The contractor must develop a **Stormwater Pollution Prevention Plan (SWPPP)** and keep it up to date. *CGP Parts 1.4.1 & 7*
- The contractor and NMDOT must each complete and submit a **Notice of Intent (NOI)** to EPA. Construction activities can begin **14 days** after EPA provides notice of a complete NOI. *CGP Part 1.4.3*
- The contractor must **post a sign** showing CGP coverage at a publicly accessible location near the site. *CGP Part 1.5*
- The contractor must **implement erosion and sediment controls and pollution prevention practices** throughout the entire construction project. These are described & **updated in the SWPPP**. *CGP Parts 2 & 7*



The SWPPP is a living document that must be revised to reflect current conditions. Source: Colorado DOT

## Key CGP Requirements Continued

- The contractor and NMDOT must conduct required **inspections** and follow CGP **timelines**. *CGP Part 4*
- The contractor must conduct **routine maintenance** and take **corrective actions** to fix problems with controls or discharges. *CGP Parts 2.1.4 & 5*
- The contractor and NMDOT must **document** all site inspections, dewatering inspections, and corrective actions. All reports and the updated SWPPP must be accurate and available upon request. *CGP Parts 4.6.3, 4.7, & 5.4*
- Any construction **site dewatering** requires inspections and specific documentation. If dewatering discharge is to sensitive waters, additional turbidity monitoring is required. *CGP Parts 2.4, 3.3, 4.3.2, & 4.6.3*



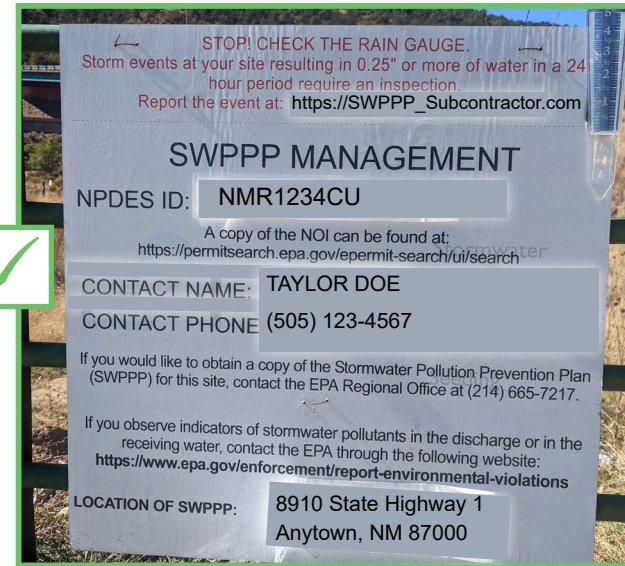
Allowing trash to collect on site violates CGP requirements.

## Signage Examples

The contractor must post notice of permit coverage in a publicly accessible location close to the construction site. This signage must include the NPDES identification (assigned with the NOI), a contact name and phone number, and required CGP statements.



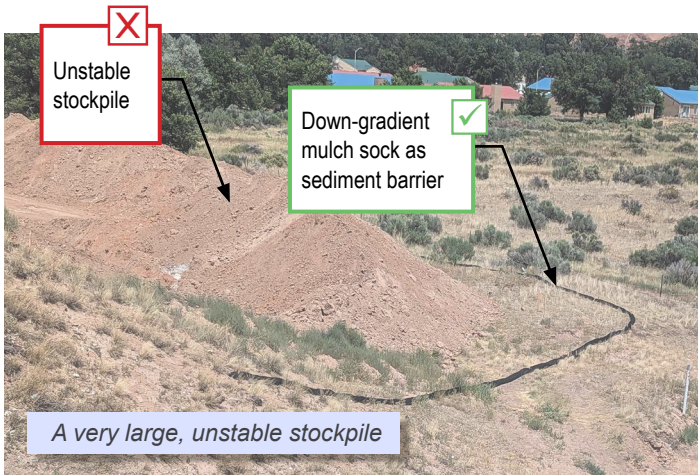
Incomplete SWPPP signage and poor location for rain gauge



Well-done SWPPP signage. Note the clear example contact information

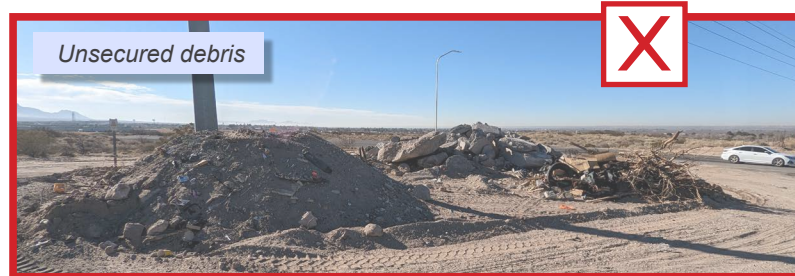
### Stockpile Management

Stockpiles of soil or other ground materials must be stabilized, covered, or watered to mitigate dust and erosion. A sediment barrier along all down-gradient perimeter areas is also required.



### Good Housekeeping

Good housekeeping is a critical part of permit compliance that includes responsible management of chemicals, waste, debris, and other potential contaminants.



## Commonly Used Terms & Acronyms

### **SWPPP - Storm Water Pollution Prevention Plan**

A plan consisting of site maps, construction/contractor activities that could cause pollutants in stormwater, and a description of measures or practices to control those pollutants. A SWPPP is a living document that must be updated throughout the construction project.

### **BMPs - Best Management Practices**

Management measures or practices used to protect air, soil, or water quality or reduce the potential for pollution associated with stormwater runoff. BMPs may be a structural device or a non-structural practice, including processes, land use alternatives, activities, or physical structures.

### **CGP - Construction General Permit**

This refers to the NPDES General Permit for Discharges from Construction Activities. This is an umbrella permit that authorizes the discharge of stormwater (and certain authorized non-stormwater discharges) from construction sites that disturb one (1) or more acres of land, and from smaller sites that are part of a larger, common plan of development or sale that will ultimately disturb one (1) or more acres of land. Both the contractor and NMDOT have CGP obligations.

### **EPA - Environmental Protection Agency**

The EPA (also sometimes referred to as United States EPA, or USEPA), has authority to issue CGP coverage in New Mexico.

### **NPDES- National Pollution Discharge Elimination System**

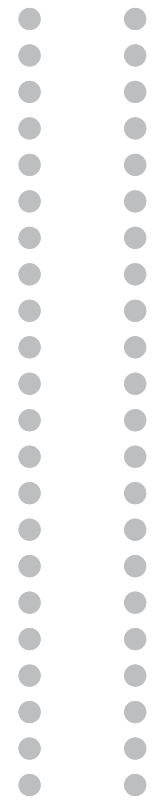
The Clean Water Act (CWA) prohibits discharging pollutants through a point source into a Water of the US without first having an NPDES permit. An NPDES permit translates the general requirements of the CWA into specific provisions tailored to the site.

### **TESCP- Temporary Erosion and Sediment Control Plan**

The formal compilation of required erosion and sediment control activities prepared for a specific construction site and for a final project. TESCP is an NMDOT term and is used for the Construction Phase. This field guide focuses on the Construction Phase TESCP, which is prepared by the contractor and shows the temporary erosion control measures, off-site flows, discharge locations, and flow paths on construction phasing plan sheets. For more information on the Construction Phase TESCP, see NMDOT Standard Specification Section 603, "Contractor Responsibilities."

### **Soil Erosion**

A natural process in which soil particles are displaced by the action of wind or water. Erosion becomes more of a problem when human activities, such as construction, accelerate the process.



### Erosion Prevention

Any practice that protects the soil surface and prevents soil particles from being detached by rainfall or wind. Erosion prevention treats the soil as a valuable resource.

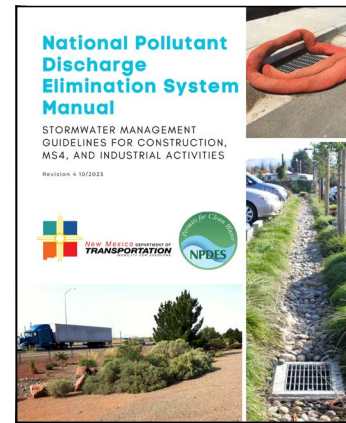
### Sediment Control

Any practice that traps soil particles after they have been detached and moved by wind or water.

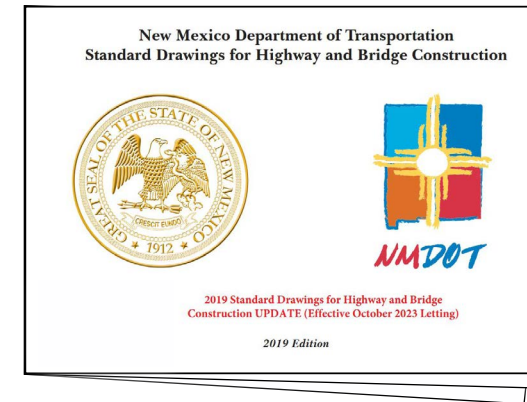
### Treatment Train

The combination of multiple, sequential BMPs that collectively deliver better overall results compared to the use of a single BMP for reducing pollutants reaching the downstream receiving waters.

### Additional Resources:



QR Code for  
**NMDOT NPDES  
MANUAL**  
See Appendix A



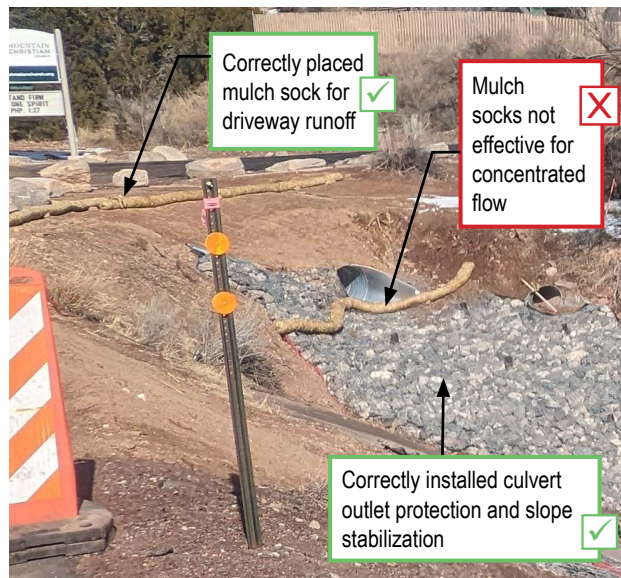
QR Code for  
**NMDOT  
STANDARD  
DRAWINGS**  
See Section 603



## Best Management Practices

This section includes information about BMPs that are commonly used for permit compliance. The table on page 17 provides an overview of the BMPs and where to find additional information in the *NMDOT NPDES Manual* or *Standard Drawings*. The BMPs are organized into the following categories:

- **Runoff Control BMPs** to manage stormwater runoff in ways that minimize erosion
- **Sediment Control BMPs** to capture sediment on-site where it can be maintained
- **Erosion Prevention BMPs** to stabilize soil



Multiple BMPs can work together as a 'Treatment train' to control erosion and sediment

BMP Name	Run-off Control BMPs			Sediment Control BMPs							Erosion Prevention BMPs				
	Rock Check Dam	Earth Berm	Slope Drain	Mulch Sock	Sediment Basin	Sediment / Silt Fence	Dewatering	Drop Inlet Protection	Outlet Protection	Stabilized Construction Entrance / Exit	Dust Control / Soil Stabiliant	Seeding	Surface Roughening	Contour Swale	Media Luna
Field Guide Page #	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
NMDOT NPDES BMP ID	RCD A3-3	--	SD A2-9	MS A2-8	SB A2-11	--	--	DIP A2-6	CP A2-7	SCEE A1-13	DU A1-1	SEED A2-1	SR A2-3	MCS A3-2	ML A3-4
NMDOT Standard Drawing #	603-01	--	--	603-01	--	--	--	603-01	602-02 and 603-01	--	--	--	--	--	--

## Rock Check Dams

Rock Check Dams (RCD) are small dams constructed across a swale or drainage ditch. They are constructed from boulders or cobble stones and can be temporary or permanent.

### Purpose

Rock Check Dams are primarily used to slow the flow of water and capture sediment in small channels, ditches, and swales.

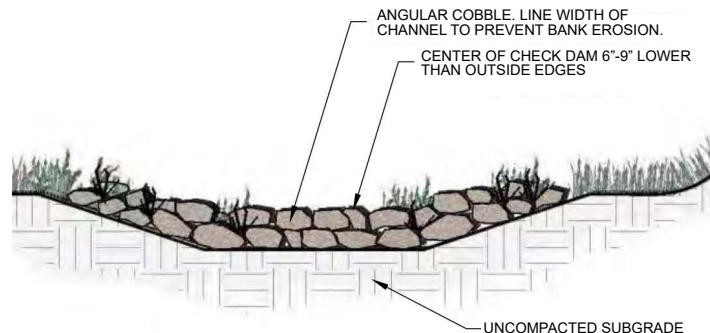
### Look for these issues:

- Unintended flooding due to impermeable soils
- Necessary maintenance after heavy flow (displacement of stones/boulders)
- Removal of accumulated sediment buildup behind check dams
- Necessary maintenance and repairs if any flows are bypassing the ends of the check dams

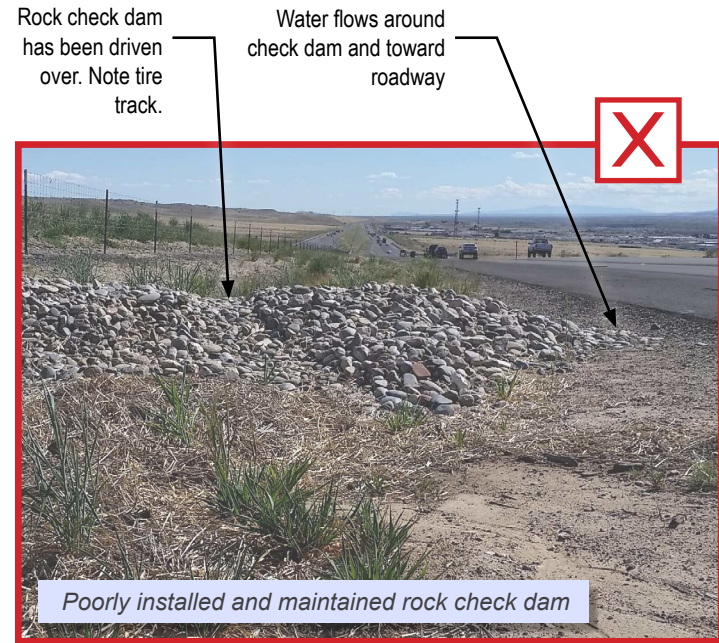
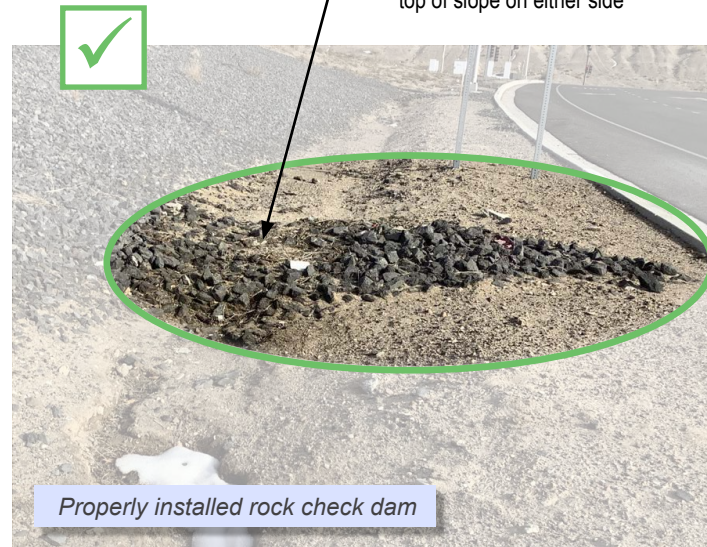
NPDES BMP ID:



Reference NMDOT Standard Drawing 603-01 for additional information.



Rock check dam section diagram from NMDOT NPDES Manual, Appendix BMP A3-3



## Earth Berm

Compacted earth structure designed to control or divert runoff within a site. Also known as Diversion Dike.

### Purpose

Can be used to keep clean water from entering a disturbed area, help direct runoff to a BMP, or as a perimeter control to prevent water from leaving the site.

### Look for these:

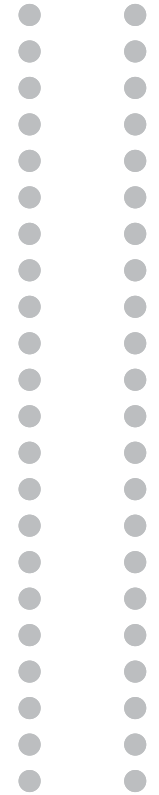
- Berm compaction to ensure stability
- Erosion or flattened areas that may need maintenance
- Runoff should not be able to flow over berm
- Repair ends of berms where bypassing occurs
- Berm should be free of organic material and pumice

NPDES BMP ID:

NONE



Compacted earth berm. Source: Minnesota Stormwater Manual



Earth berms with uncompacted soil would not withstand water flows or wind and can create an additional source of potential erosion and sediment.



## Slope Drain

A slope drain (SD) is a temporary pipeline or rundown that conveys flow from diversion channels, dikes, or other areas with concentrated flows down an unstabilized slope.

### Purpose

Slope drains are primarily used to limit erosion on long, unstabilized slopes, large berms, or grade changes.

### Look for these:

- Damage from construction traffic
- Unsecured temporary pipelines
- Ensure installation of riprap apron or other energy dissipater to reduce velocity and the spread the flow at bottom of drain

NPDES BMP ID:



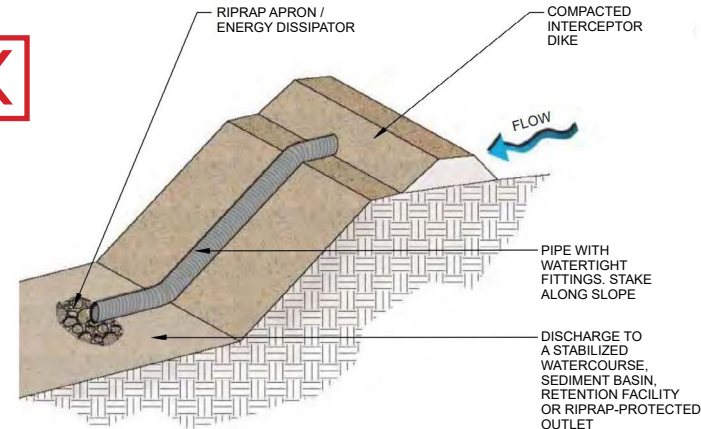
Slope drain anchored at top and toe of slope, conveys runoff down unstabilized slope

Slope drains may be constructed from riprap

Slope drain without erosion protection/energy dissipation at toe  
Erosion showing where slope drains should have been used



One slope drain where there should have been many



Slope drain diagram from NMDOT NPDES Manual, Appendix A BMP A2-9

## Mulch Socks

Mulch socks (MS) are made of mesh tubes filled with wood chips, straw mulch, composted mulch, or other similar materials as approved by the Project Manager. For Final Stabilization, biodegradable materials (Composted Mulch Sock - CMS) must be used per NMDOT Standard Specifications 603 and 632.

### Purpose

Mulch socks are primarily used to filter and slow stormwater. There are different methods for sheet flow and concentrated flow use. See NMDOT Standard Drawing 603-01.

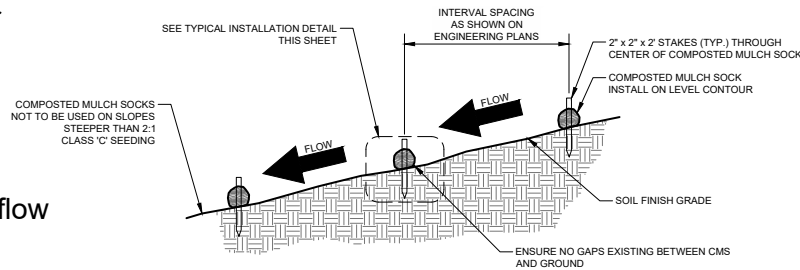
### Look for these:

- Restake and overlap socks that are displaced
- Remove sediment that builds up behind socks
- Install mulch socks parallel to the slope (on a level contour)

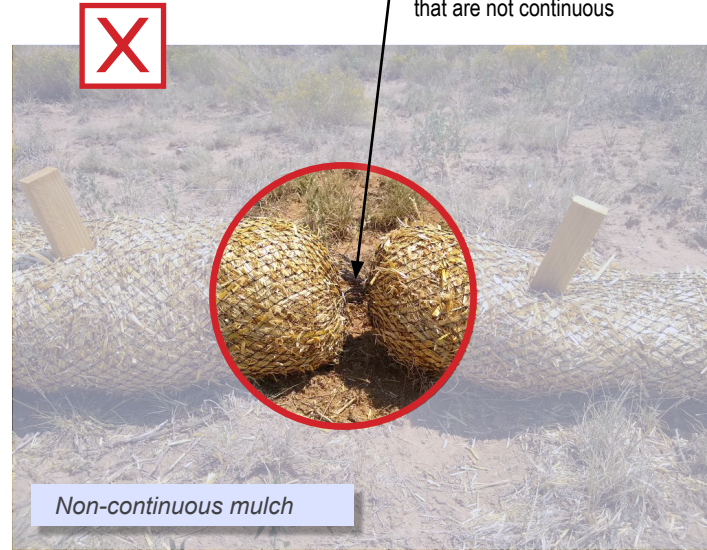
NPDES BMP ID:



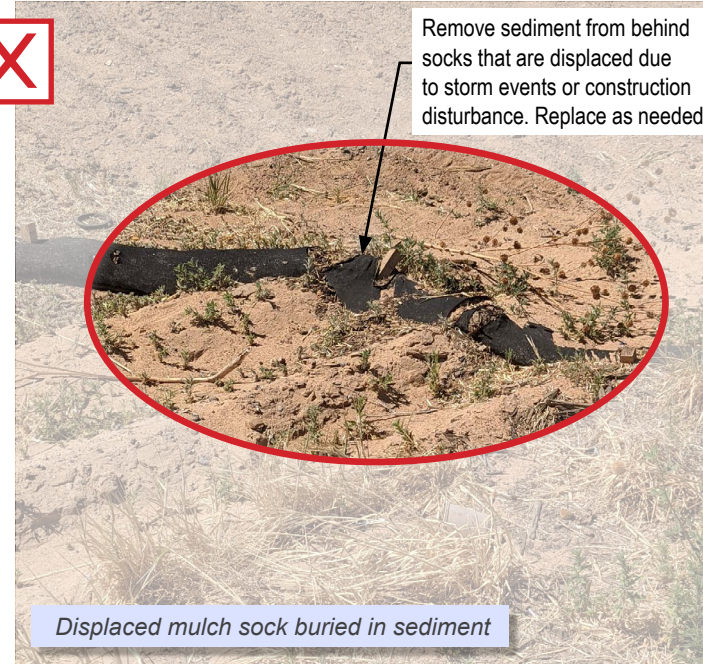
Reference NMDOT Standard Drawing 603-01 for additional information.



Excerpt of NMDOT Standard Drawing 603-01 for Composted Mulch Sock



Non-continuous mulch



Displaced mulch sock buried in sediment

## Sediment Basin

A pond area with a controlled outlet in which suspended sediment is allowed to settle.

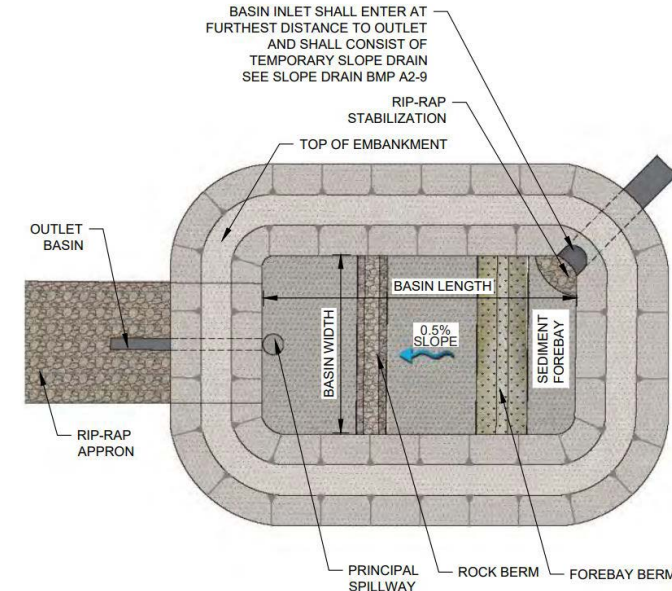
### Purpose

Permanent or temporary erosion and sediment control. Effectively used for removing sediments and other pollutants from stormwater.

### Look for these:

- The outlet crest should be at least 1 foot below top of embankment
- Areas where sediment must be removed or re-grading of basin if necessary
- Inspect for any damage or obstructions of the basin

NPDES BMP ID:



Sediment basin plan view diagram from NMDOT NPDES Manual, Appendix A BMP A2-11

### Sediment/Silt Fence

Used to retain soil on disturbed land around construction sites until the activities disturbing the land are completed.

#### Purpose

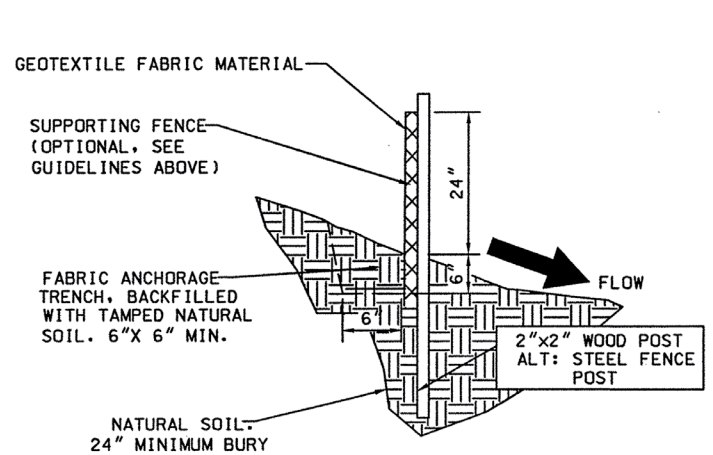
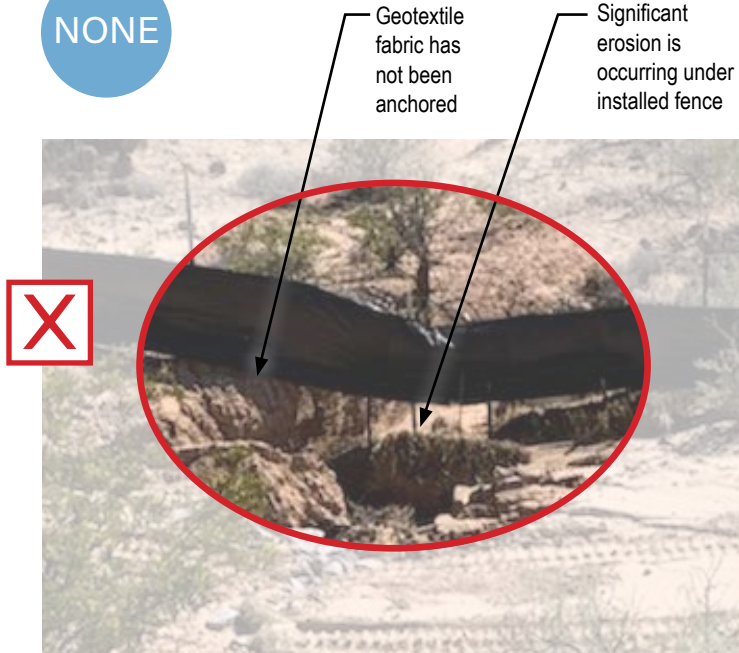
Prevents degradation of aquatic habitats, soil from washing onto roads, and avoids clogging sewers with sediments.

#### Look for these:

- Water should not flow over fence fabric
- Proper placement to ensure all runoff water from the site is filtered
- Damage to geotextile fabric or anchors (tears or failure of sediment control)
- Install silt fencing parallel to the slope (on a level contour)

NPDES BMP ID:

NONE



Excerpt of standard drawing or silt fence

## Dewatering

Pumping water from disturbed surface areas, such as trenches, sumps, excavation pits, sediment basins, or other excavations where ground water, surface water or stormwater collect.

### Purpose

To prevent erosion and prevent sediment and other pollutants from the pump outlet from causing erosion or going directly off-site.

### Look for these:

- Avoid dewatering discharges from the site by using water for dust control
- Must monitor and document all dewatering activities following CGP requirements
- Must not cause erosion at the discharge point
- Must not discharge directly off-site

NPDES BMP ID:

NONE



*Dewatering bag being used to contain sediment. Source: Lexington-Fayette Urban County Government*



*Dewatering without sediment containment, downstream erosion protection, or documenting dewatering activities*



*Untreated dewatering discharge causing erosion. Source: The Constructor.org*



## Drop Inlet Protection

Drop Inlet Protection (DIP) is the use of stone, filter fabric, mulch socks, or other material to intercept sediments before entering drop inlets.

### Purpose

Drop inlet protection is normally used in combination with other BMPs and as a second defense in site sedimentation control at drop inlets.

### Look for these:

- Porosity in order to avoid ponding and possible flooding
- Overloading conditions of inlet leading to ineffectiveness
- Sediment and debris that need to be removed
- Mulch socks that need to be replaced or restaked

NPDES BMP ID:



Reference NMDOT Standard Drawing 603-01 for additional information.



## Outlet Protection (Includes Culvert Protection)

Outlet protection is the use of structures and materials including rip rap, geotextiles, wire and mulch socks to capture sediment and protect against erosion anywhere there is a discharge from the property.

### Purpose

Outlet protection reduces velocity and energy of stormwater flow and reduces erosion. It also captures sediment before it leaves the property.

### Look for these:

- Sediment and wash buildup at outlets
- Inspect after storms
- Rocks, mulch socks, etc. that need replacing
- Ensure Class A pads form a channel. See NMDOT Standard Drawing 602-02

NPDES BMP ID:



Reference NMDOT Standard Drawing 603-01 for additional information.



## Stabilized Construction Entrance/Exit

A stabilized construction entrance/exit (SCEE) consists of a rock-like material on geotextile filters to facilitate wash-down or removal of sediment from construction equipment prior to exiting the site.

### Purpose

To reduce off-site sediment tracking from trucks and construction equipment, and for sites where considerable truck traffic occurs each day.

### Look for these:

- Location accommodates construction traffic
- Function and reduction of sediment spreading off-site
- Effectiveness at reducing sediment and pollution
- Sediment tracked on road and not swept each night

NPDES BMP ID:



Track-out pad to trap construction sediment



Stabilized Construction Entrance / Exit



No sediment control at entrance/ exit, sediment tracked off-site. Source: Minnesota Stormwater Manual

## Dust Control/Soil Stabilant

Dust control measures reduce a construction site's potential for producing airborne dust that can lead to air and water pollution.

### Purpose

Dust control is used to limit and control nuisance dust from disturbed landscapes due to grading operations, drilling, batch drop operations, unstabilized areas, soil and debris storage piles, etc.

### Look for these:

- Proper maintenance while land clearing and earthmoving
- Dust control plans for construction or land-clearing
- Wet soils treated with stabilization agents (stabilant)
- Areas not being worked for 14 days. See NMDOT Standard Specification Section 603

NPDES BMP ID:



QR Code for  
NMDOT Dust  
Control Brochure



Loose unstabilized soil



Unstable slope



Green dye still visible in soil stabilant

## Seeding

Temporary or permanent seeding is used to establish vegetative cover on disturbed areas. NMDOT Standard Specification Section 632 addresses revegetation.

### Purpose

Revegetation reduces erosion on stockpiles, berms, mild to medium slopes, and in swales and along roadways. Seeding can and should apply to every construction project, with few exceptions.

### Look for these:

- Germination or growth of vegetation
- Remove noxious weeds
- Reseed areas where necessary as soon as possible
- Rilling or erosion

NPDES BMP ID:



*Eroding revegetation seeding*



*Revegetation seeding growing in well*



*Successful revegetation seeding with mulch sock protection of culvert outlet*

## Surface Roughening

Surface roughening (SR), or slope tracking, provides a series of horizontal ridges and depressions running parallel to the slope creating micro-environments for seeding and water infiltration.

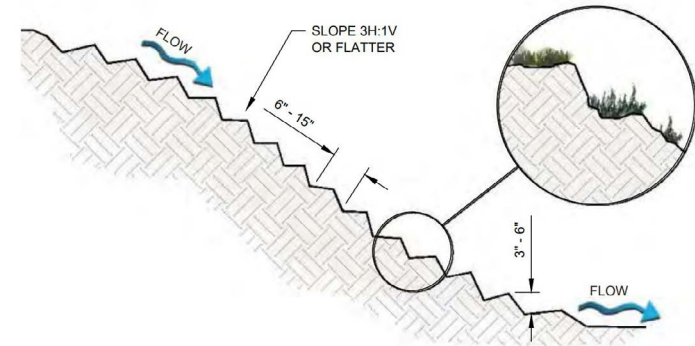
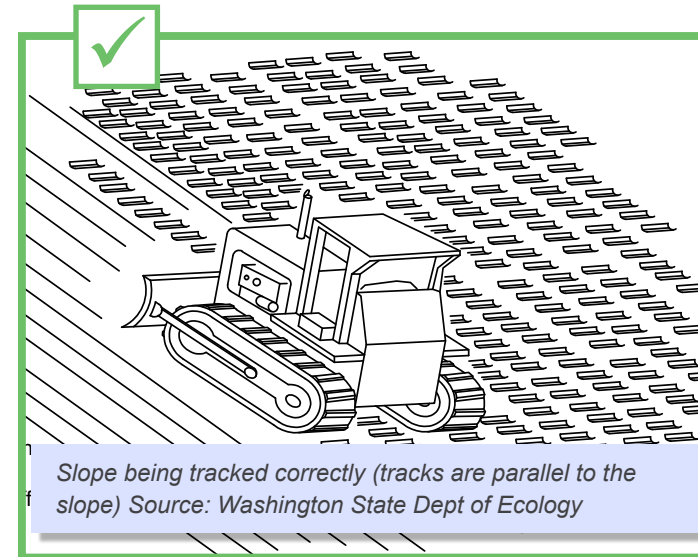
### Purpose

Surface roughening is primarily used to slow surface flow, increase material deposition, and trap water to encourage plant growth. Used in conjunction with seeding or mulching.

### Look for these:

- Compaction disturbance from vehicle and/or equipment
- Removal of invasive plants and weeds
- Conditions that are too dry for tracking
- Re-tracking if rilling occurs
- Ensure tracks are oriented parallel to toe of slope

NPDES BMP ID:



Surface roughening section view diagram from NMDOT NPDES Manual, Appendix A BMP A2-3

## Contour Swale

A contour swale (CS) is a linear depression on-contour with a consistent elevation and associated with a berm in order to capture and infiltrate water on a slope.

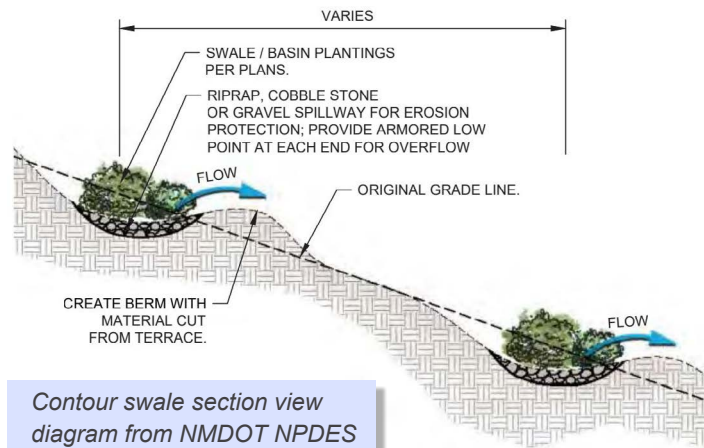
### Purpose

Contour swales are primarily used to stabilize slopes, decrease erosion, and provide water for stabilizing plantings on a slope.

### Look for these:

- Over-topping due to elevation leveling issues
- Regrading due to erosion or stabilization problems
- Noxious weeds to be removed

NPDES BMP ID:



Contour swale section view diagram from NMDOT NPDES Manual, Appendix A BMP A3-2 (Two contour swales shown)



Contour swales with plants



Contour swales with aggregate

## Media Luna

Media Lunas (ML), or half moons, are water dissipation structures used at the top and/or bottom of a slope, gully or channel. They are arc-shaped and can be used as a flow spreader or a flow concentrator.

### Purpose

Media Lunas are used to stabilize rills and gullies entering a channel or swale condition. They are most often used as flow spreaders and can be paired with seeding, surface roughening, rock check dams, and other stabilization measures.

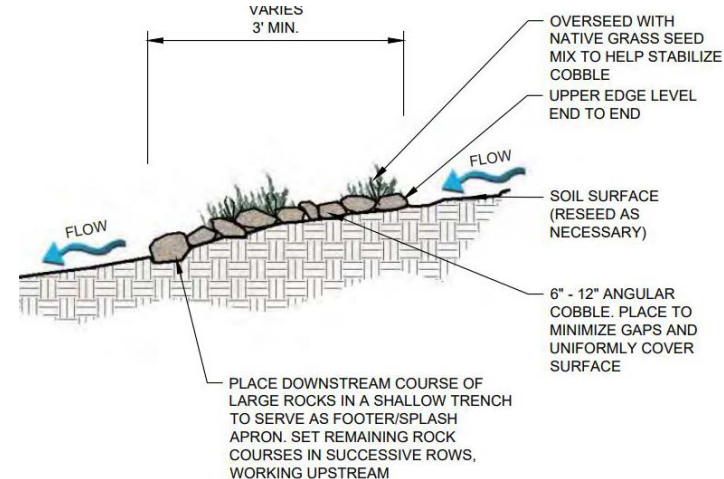
### Look for these:

- Inspect for sediment buildup
- Largest rocks along the downstream edge

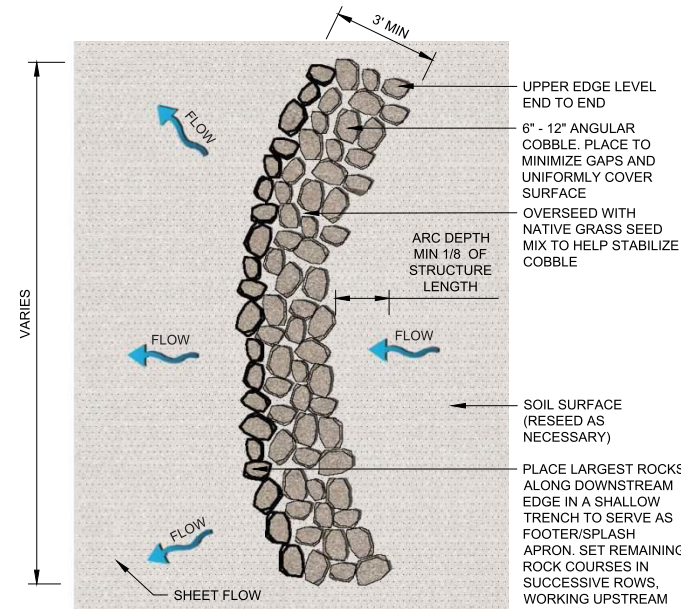
NPDES BMP ID:



Media Luna structure (as flow spreader)



Media Luna section view diagram from NMDOT NPDES Manual, Appendix A BMP A3-4



Media Luna plan view diagram from NMDOT NPDES Manual, Appendix A BMP A3-4



### Quiz Yourself!

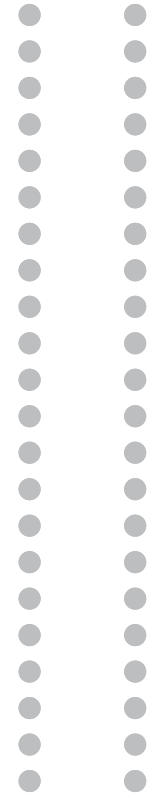
In each of the following photos, check your understanding of construction-phase temporary erosion and sediment controls by identifying the BMPs that have been correctly installed and maintained, are missing, or that have been incorrectly installed and maintained.



Correct: Mulch socks located to protect inlet, overlapping mulch socks  
Incorrect: Sediment collected behind mulch sock, stakes damaged, 2" x 2" stakes should be used



Correct: Rock check dam with mulch sock, mulch sock correctly located to protect culvert  
Incorrect: Unstabilized slope, sediment collected at culvert, mulch socks not staked and overlapping mulch socks  
Incorrect: Rock check dam with mulch sock, mulch sock correctly located to protect culvert may have been added after culvert filled with sediment, roadside ditch may need check dam



Correct: Mulch socks staked at base of debris pile  
Incorrect: Unstabilized slope, construction debris in waterway, debris pile within buffer zone of waterway



Correct: Port-a-potties located away from flow paths  
Incorrect: Unstabilized slope, rilling along roadway, visible tracking in collected sediment, materials stockpiled within flow path

# Quick References



QR code for  
*NMDOT NPDES  
Manual PDF*



QR code for  
*NMDOT  
Standard  
Drawings*



QR code for  
*NMDOT Dust  
Control  
Brochure PDF*



QR Code for  
*NMDOT  
Roadside  
Bureau Website*  
with links to the  
EPA CGP and  
other resources



*New Mexico* DEPARTMENT OF  
**TRANSPORTATION**  
MOBILITY FOR EVERYONE

**Roadside@dot.nm.gov**