provo PUBLIC WORKS

STORM WATER QUALTIY AND EROSION CONTROL MANUAL

March 4, 2014 (Revised Annually January 1st)

SECTION 1
PURPOSE

Background

Erosion and sedimentation are naturally occurring processes whereby soil is removed from one area, transported, and deposited in another location. The rate of erosion and sedimentation varies by area due to a variety of factors such as soil type, vegetative cover, slope and rainfall. These natural processes can be greatly accelerated by human activities, especially construction activities.

In the recent past the effects of construction activities on storm water runoff has typically been limited to an analysis of the peak storm water runoff rate. New storm water regulations, described below, require that storm water runoff quality be addressed during construction activities. This typically requires the implementation of erosion control Best Management Practices (BMPs).

Storm Water Regulations

In 1990, under the Clean Water Act, Phase I of the U.S. Environmental Protection Agency's (EPA) storm water program was promulgated. Phase I relies on National Pollution Pollutant Discharge Elimination System (NPDES) permit coverage to address storm water runoff from medium and large municipal separate storm sewer systems (MS4s). Phase I generally applied to populations of 100,000 or greater and construction activities impacting 5 or more acres of land.

Phase II of the NPDES storm water pragmas became final in 1999. Phase II applies to small municipalities and construction activities impacting 1 or more acres of land. According the EPA's designation, Provo City is a Phase II MS4.

The Division of Water Quality (DWQ) administers the NPDES permit program in the State of Utah. Construction activities that disturb one or more acres of land must be authorized under the UPDES General Permit for Construction Activities. To obtain a General Construction UPDES permit the applicant must prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must include specific Best Management Practices (BMPs), which are intended to reduce or eliminate storm water pollution from the proposed construction site (see Section 3 for more information regarding SWPPPs).

Purpose of This Guidance Document

The primary purpose of this document is to assist those associated with construction, site development and all those involved with activities that disturb the ground surface with the requirements of the UPDES General Construction Permit and with selecting and implementing appropriate Best Management Practices (BMPs).

SECTION 2
EROSION AND SEDIMENTATION

Background

Erosion and sedimentation are naturally occurring processes whereby soil is removed from one area, transported, and deposited in another location. These natural processes can be greatly accelerated by human activities, especially construction activities. The Environmental Protection Agency (EPA) has reported that sediment runoff rates from construction sites are typically 10 to 20 times greater than from agricultural lands. For disturbed forest lands, the sediment runoff rates are 1,000 to 2,000 times greater than natural runoff.

This Section discusses the erosion process, the effects of sediment on receiving waters and typical causes of erosion associated with construction activities.

The Erosion Process

The rate of erosion varies by area due to a variety of factors such as soil type, vegetative cover, slope and rainfall. In general, the erosion process begins raindrop splash erosion and can progress through sheet, rill, gully, and channel erosion as described below. It should be noted, however, that erosion does not always manifest itself in this particular order.

1. **Raindrop Splash Erosion** – Occurs when a raindrop impacts the soil surface and causes the soil to be displaced.

2. **Sheet Erosion** – Occurs when individual raindrops collect on the ground surface and runoff in a thin layer. As the velocity of the runoff increases, so does the potential for the rainfall runoff to collect and transport small soil particles.

3. **Rill Erosion** – Occurs when the sheet runoff concentrates into small channels, usually several inches deep. Rills can easily be obliterated by tillage.

4. **Gully Erosion** – Occurs when multiple rills converge and form gullies. Gullies, in

Figure 1 - Photo showing erosion including rills and, on the left hand-side, a gully. Source, SCS Soil Survey Manual.

contrast to rills, cannot be obliterated by tillage.

5. **Channel Erosion** – Occurs when a combination of rill and gullies converge to form channels. If left un-stabilized, the channel bed and banks will continue to erode indefinitely.

Effects of Sediment on Receiving Waters

The erosion process results in pollution suspended in the storm water runoff. An increase in suspended solids increases the turbidity and decreases the sunlight in the water, which can adversely affect aquatic life. Polluted storm water can harm or kill fish and other aquatic life. The cost of water treatment increases for polluted water. It is also less desirable for human recreation.

The most common pollutant resulting from erosion is sediment. Sedimentation can destroy aquatic habitat. It can also decrease the conveyance and/or storage capacity of culverts, channels and water bodies. The decreased conveyance and/or storage capacity of receiving water increases the cost of maintenance and the potential for flooding.

Sediment is not the only form of pollution resulting from erosion. Pollutants, such as nitrogen and phosphorus, are transported with sediment. Healthy levels of nitrogen and phosphorus vary naturally in water bodies and some amount is not harmful. However, elevated levels of these nutrients speed up the growth of algae in surface waters to unhealthy levels. When the algae grow fast enough they form algal blooms, which harm the ecosystem by reducing that amount of sunlight that penetrates the water, reducing oxygen in the water, and occupying a dense amount of biomass throughout the water column.

The EPA and State of Utah recognize the negative effects sediment has on receiving waters. Consequently, municipalities are required to reduce the discharge of pollutants to the maximum extent practicable. The remainder of this manual focuses on assisting those associated with land disturbance activities with planning and implementing erosion control measures that will reduce or eliminate erosion and the discharge of pollutants to the waters that receive storm water runoff throughout the City.

SECTION 3
GENERAL EROSION CONTROL GUIDELINES

The Importance of Planning

Most erosion associated with development originates from poor planning. If activities such as improper grading, removal of vegetation, construction of impervious areas and other construction activities are not mitigated, soil erosion can increase exponentially, which in turn adversely impacts storm water. Forethought and careful planning are vital to effective erosion control.

Below is a discussion on typical causes of erosion associated with construction activities followed by general guidelines for controlling soil erosion.

Typical Causes of Erosion Due to Construction Activities

When rain falls on undisturbed land, there are several processes that serve to limit the amount of erosion that occurs. First, natural vegetation breaks the impact of the raindrops falling on the surface and enhances the infiltration of water into the soil surfaces. Next, the root systems hold the soil in place. Then, the undulating terrain disperses the water over a broad area, eventually concentrating flow in swales and river channels. These swales and river channels are typically lined with natural riparian vegetation that further reduces the potential for erosion.

When natural vegetation is disturbed, and soil erosion is not mitigated, the amount of sediment-laden runoff increases. Sediment runoff rates from construction sites are typically 1,000 to 2,000 times greater than natural runoff for forest lands. Typical causes of erosion due to construction activities are described below.

- **Disturbing Existing Drainage Flow** – The natural drainage flow patterns have stabilized over time. Disturbing the existing drainage flow can lead to concentration of flows, less infiltration and channels susceptible to erosion that have not adequately stabilized over time.

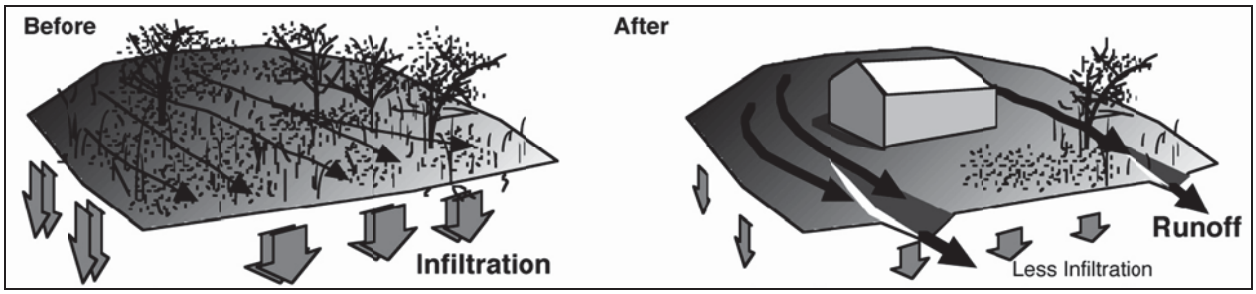


Figure 2 - Example of Disturbing Existing Drainage Flows

- **Removing Existing Native Vegetation –** Native vegetation protects the soil. Roots and coverage promotes infiltration. Removal of vegetation removes the coverage and roots, thus decreasing infiltration and increasing runoff.

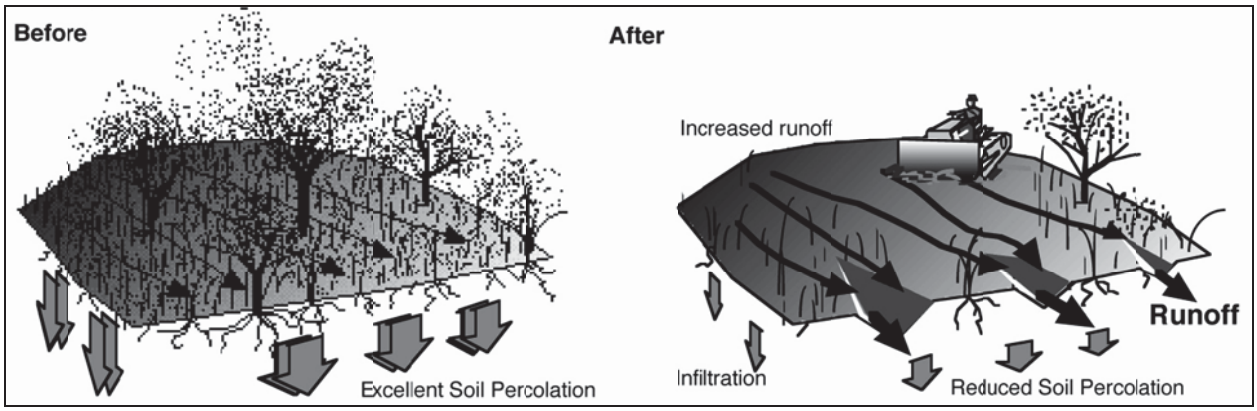


Figure 3 - Example of Removing Existing Native Vegetation

- **Construction of Impervious Surfaces –** Native vegetation decreases runoff by increasing infiltration through the root system and increasing evapotranspiration through the vegetation coverage. Construction of impervious surfaces eliminates infiltration into the soil and greatly reduces evapotranspiration of water back into the atmosphere, thus increasing runoff.

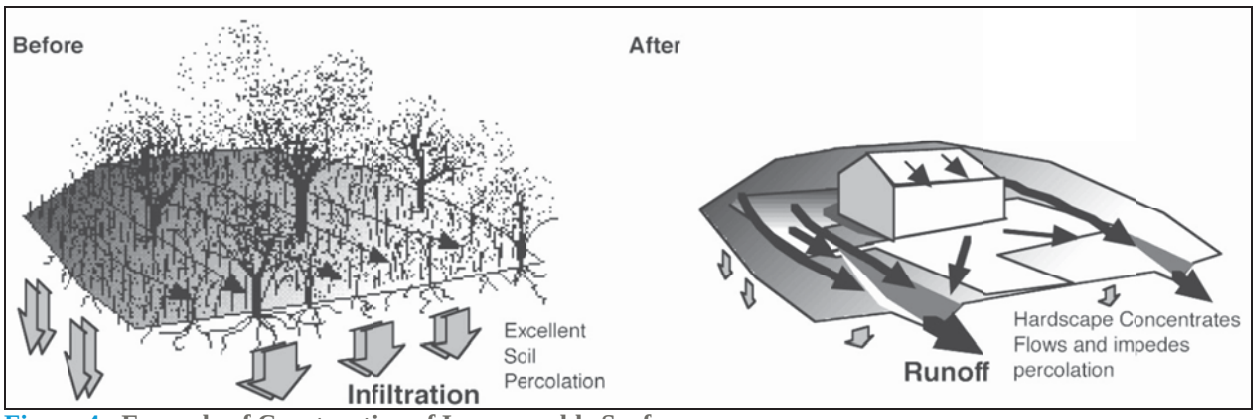


Figure 4 - Example of Construction of Impermeable Surfaces

- **Grading or Disturbance of Sloping Land** – Sloping land is susceptible to erosion. Unaltered, vegetated slopes have stabilized over time and are often fortified by the vegetation root system. Grading or disturbing of sloping land can remove the stabilizing vegetation root system, thus increasing the potential for rill and gully erosion.

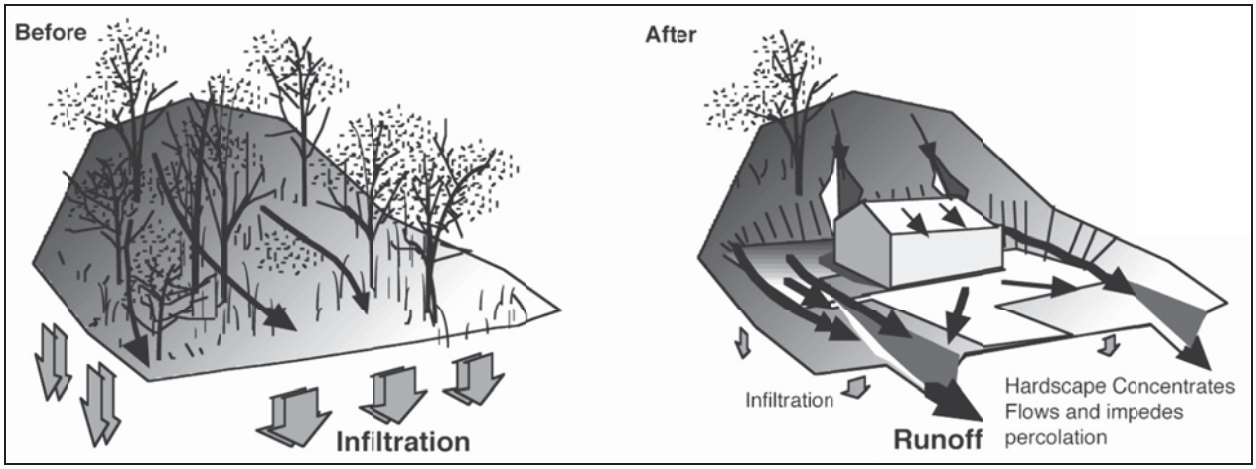


Figure 5 – Example of Grading or Disturbance of Sloping Land

General Guidelines for Controlling Soil Erosion

When human activities modify landscapes, the drainage flow is interrupted. Protective vegetation is removed and surface flow is redirected and concentrated, greatly accelerating the potential for erosion. With proper planning and proper implementation of BMPs, it is possible to minimize the negative impacts associated with erosion.

General guidelines for eliminating or reducing erosion include, but are not limited to:

- Retain Natural Vegetation – The most effective way to control soil erosion is to limit the amount of disturbance of the natural landscape.
- Use Erosion Control and Sediment Collection Measures – This includes temporary measures used during construction as well as permanent post-construction erosion control measures.
- Keep Storm Runoff Velocities Low – Check dams and vegetative buffers help to slow runoff velocities.
- Divert All Concentrated Runoff to Stable Outlets and Design Drainageways to handle diverted storm water flows.
- Limit Grading and Design Development Projects to Accommodate Existing Topography.
- Protect Existing Slopes by Implementing Slope Stabilization BMPs.
- Minimize Creation of Impervious Surfaces.

Refer to Appendix A for detailed erosion & sediment control BMPs.

SECTION 4
STORM WATER POLLUTION PREVENTION PLANS

Purpose

The purpose of a Storm Water Pollution Prevention Plan (SWPPP) is to identify possible pollutant sources to storm water and to identify BMPs that, when implemented properly, will reduce or eliminate the discharge of pollutants to the storm drainage system.

Who Must Prepare a SWPPP?

Construction activities that disturb one or more acres of land must be authorized under the UPDES General Permit for Construction Activities. To obtain a General Construction UPDES permit the applicant must prepare a Storm Water Pollution Prevention Plan.

All new construction that disturbs one acre of land or more in Provo City shall obtain a UPDES Storm Water General Permit for Construction Activities (Permit #UTR300000) or an alternate individual permit before construction begins. The permit requires the operator, typically the contractor, to control or eliminate storm water pollution sources through the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). SWPPP templates can be found at www.provo.org for all projects.

SWPPP Components

The SWPPP shall be prepared and submitted to the Public Works Director, or his designee, for review. The SWPPP template must be approved prior to obtaining a grading permit.

A SWPPP shall include the following:

1. *Site Description*
    a. Description of the nature of the construction activity;
    b. Description of potential pollution sources associated with the proposed construction activity.
    c. Estimates of the total area that will involve land disturbance activities and the proposed sequencing of land disturbance activities;
    d. A general location map and a site map indicating:
        1) Drainage patterns and general slopes of both pre and post-construction conditions;
        2) Construction boundaries and description of existing and proposed vegetation;
        3) Areas of land disturbance and areas indicating no land disturbance;
        4) Location of proposed BMPs;
        5) Location of existing ditches, channels, wetlands, drainageways, etc.;
        6) Storm water discharge location(s).
    e. Name of downstream receiving waters
    f. A copy of the UPDES General Construction Permit No. UTR 300000.

2. *Controls*
   a. Short and long-term erosion and sediment controls and a narrative describing the goals of each control.
   b. Description of measures that will be implemented during pre and post-construction activities.
   c. Address other items such as: solid waste disposal, vehicle tracking, sanitary waste disposal, material stockpile management, concrete washout, fueling activities, etc.
3. *Maintenance*
   Provide a description of procedures to ensure the timely maintenance of the BMPs identified in the SWPPP.
4. *Inspections*
   a. Provide an inspection schedule that includes all BMPs implemented as part of the SWPPP. Minimum inspection frequencies shall conform to Section 3.5.4 of the UPDES General Construction Permit No. UTR 300000.
   b. As part of the SWPPP, list the name, contact information, and credentials of each person who is authorized to perform SWPPP inspections.

SWPPP Template

To help with development of the narrative section of the SWPPP, Provo City has modified the U.S. Environmental Protection Agency (EPA) electronic SWPPP template, and requires this template to be used for all SWPPP's submitted to the City for review. A copy of the template and can be found on the Provo City Website. www.provo.gov

Pre-Construction Site Assessment

Prior to developing a SWPPP a site assessment shall be conducted to document the following conditions:

- Vegetation types and density;
- Landforms, slopes and soil types;
- Drainages, waterways and storm drain systems;
- Existing structures, roadways and disturbed areas; and
- Historical soil and water quality and land use information (if available).

Detailed Site Maps

The SWPPP submittal must contain detailed site maps. For most projects, a series of site maps is recommended. The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site or for more complicated sites show the major phases of development.

These maps should include the following:

- Direction(s) of storm water flow and approximate slopes before and after major grading activities;
- Areas and timing of soil disturbance;
- Areas that will not be disturbed;
- Natural features to be preserved;
- Locations of major structural and non-structural BMPs identified in the SWPPP;
- Locations and timing of stabilization measures;
- Locations of off-site material, waste, borrow, or equipment storage areas;
- Locations of all waters of the United States, including wetlands;
- Locations where storm water discharges to surface water;
- Locations of storm drain inlets; and
- Areas where final stabilization has been accomplished.

Selecting Site BMPs

Select BMPs in accordance with the guidelines set forth in Section 3. Section 5 describes several different BMPs that may be used to develop a SWPPP.

Inspection and Reporting

Inspections shall be performed by qualified personnel and an inspection report shall be filed with the onsite SWPPP documents. SWPPP inspections and inspection reports shall conform to the provisions of Section 3.5.4 of the UPDES General Construction Permit No. UTR 300000.

Permitting Process

The following general process shall be followed prior to performing construction activities on any project in the City that requires a SWPPP:

1. Fill out the appropriate SWPPP template for the proposed project. The SWPPP template can be found on the Provo City webpage.
2. The Operator prepares a SWPPP in accordance with the provisions of this manual.
3. The Operator Submits SWPPP to City for review.
4. If the proposed project is required to obtain a General Construction from the State of Utah, DWQ, the Operator applies for the permit by completing the Notice of Intent (NOI) form. The form can be completed online at www.waterquality.utah.gov/UPDES/stormwatercon.htm
5. Construction may commence only after:
    a. The SWPPP has been reviewed and approved by the City.
    b. The NOI, if required, has been submitted to the State of Utah, DWQ.
    c. The Operator has attended a pre-construction meeting with designated city personnel to review and discuss construction activities as they relate to the SWPPP.
    d. All other applicable permits have been obtained from the City.

6. Once construction has been completed and the site stabilized, the contractor shall complete the Notice of Termination (NOT) form and submit to the State of Utah, DWQ.

On-Site Records

A binder shall be kept on-site at all times during construction activities that contains the following items:

- Current SWPPP
- Field Inspection Reports / Records
- NOI
- NOT (once the project is complete)

SECTION 5
CONSTRUCTION BEST MANAGEMENT PRACTICES

Selecting Construction Best Management Practices

Implementation and maintenance of BMPs for erosion and sediment control during construction activities is critical to storm water quality management.

The selection of BMPs is site-specific with regard to construction activity, topography, soil conditions, and storm water facilities. A general selection process is described below.

1. *Define BMP Objectives & Locations:* Determine locations where erosion is likely to occur and where other construction related pollutants may be generated. A BMP objective should be defined for each location that has the potential for erosion of pollutant generation. Typical BMP objectives for a typical construction project include, but are not limited to:
   - Practice Good Housekeeping – Perform activities in a manner which keeps potential pollutants from either draining or being transported offsite by managing pollutant sources and modifying construction activities. Dispose of waste materials in designated areas and in designated containers away from rainfall and storm water runoff.
   - Minimize Disturbed Areas – Only clear land that will be actively under construction in the near term. Minimize land disturbance and do not clear or disturb sensitive areas such as: steep slopes, vegetative buffers, wetlands, etc.
   - Stabilize Disturbed Areas – Provide temporary stabilization of disturbed soils whenever active construction is not occurring on that portion of the site. Provide permanent stabilization during the final grading process and carefully landscape the site.
   - Control Internal Erosion – Detain sediment-laden waters from actively disturbed areas within the site to minimize the risk that sediment will have the opportunity to leave the site. Ensure that vehicles exiting the site do not track mud and debris from the site.

2. *Identify the BMP Category:* Select the appropriate category or categories of BMPs which address each objective. To evaluate where to implement categories of BMPs, a map of the project site is prepared with sufficient topographic detail to show existing and proposed drainage patterns and existing and proposed storm water control structures. The project site map should identify the following:

   - Locations where storm water enters and exits the site;
   - Locations of permanent storm water collection and control systems;
   - Locations subject to high rates of erosion such as steep slopes or unlined channels;
   - Locations of sensitive areas which must not be disturbed. Establish clearing limits around these areas to prevent disturbance by the construct activity;
   - Locations of the Boundaries of Drainage areas if the site has more than one drainage outlet. Calculate the approximate area of each drainage area;

- Define areas where various contractor activities have a likely risk of causing a pollutant discharge.

Once identified on the site map, the categories of BMPs can be selected and located. In general, source control BMPs should be utilized wherever possible because it is better to ***prevent*** erosion and pollution than to ***remove*** sediments and pollutants.

3. *Select an Appropriate BMP:* BMPs are often selected from each category based on site constraints, construction requirements, and cost-effectiveness considerations. Many BMPs achieve more than one BMP objective. This should be taken into consideration when selecting BMPs to achieve maximum cost-effectiveness. Not all BMPs will apply to every site, however; all BMPs should be considered for each site. Different BMPs may be needed for different phases of the construction project. Thus, the Storm water Pollution Prevention Plan may include a set of BMPs suitable for different stages of the project.

For the purposes in this manual, BMPs for construction activities are grouped into the following 6 categories:

- Erosion Controls
- General Pollution Prevention
- Materials Handling and Spill Prevention
- Post-construction Control
- Sediment Control
- Waste Management

Erosion Controls

Erosion controls are surface treatments that stabilize soil exposed by excavation or grading.

The purpose of erosion controls is to limit or eliminate erosion at the source by protecting the soil surface from raindrop impact and overland flow erosion. Soil stabilization is a common and effective practice used to minimize erosion. Soil stabilization practices reduce the potential for erosion by:

- Absorbing the kinetic energy of raindrops
- Intercepting water so it can infiltrate into the ground
- Slowing the velocity of runoff
- Binding the sediments to the root layer

General Pollution Prevention

General Pollution Prevention BMPs are implemented to minimize or prevent general contamination of the construction site and natural resources.

BMPs in this category do not necessarily fit well into one of the categories above, but rather applies to the site in general.

Materials Handling and Spill Prevention

Materials Handling and Spill Prevention involved are measures implemented to minimize or prevent contamination of the natural resources present from materials stored on construction sites.

Materials stored on construction sites are a major source of risk of polluting the storm water. Materials must be stockpiled, managed and used properly to mitigate that risk. The most common Materials Handling and Spill Prevention BMPs are described below.

Post-Construction Controls

Implementation of post-construction BMPs (also referred to as permanent BMPs) is critical to storm water quality management. This primarily includes developing strategies to implement a combination of structural and non-structural BMPs to limit or eliminate long-term erosion from the site.

Sediment Controls

Sediment controls capture soil that has been eroded and trap the sediment in a controlled area prior to leaving the site.

The most effective way to manage sediment runoff is to employ erosion control BMPs in an attempt to limit or eliminate sediment runoff. However, erosion is inevitable to some extent on construction sites. Therefore, anticipating erosion and providing sediment controls is a fundamental aspect of planning a SWPPP. The most common Sediment Control BMPs are described below.

Waste Management

Waste Management is measures implemented to minimize or prevent general contamination of the construction site.

Sites where construction wastes are stored are a major source of risk. Wastes leaked or spilled from management areas may build up in soils or on other surfaces and be carried by storm water runoff.

The optimal approach to reduce the potential for storm water contamination from wastes is to reduce the amount generated and, consequently, the amount stored onsite. The most common Waste Management BMPs are described below. Appendix A contains descriptive BMP sheets for various BMPs in each category. The BMPs shown in the appendix are not meant to be all inclusive.

REFERENCES

1. Colorado Department of Transportation, Erosion Control and Storm water Quality Guide, 2002.

2. Environmental Protection Agency, *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, January 1993.

3. Environmental Protection Agency, *Storm Water Phase II Final Rule Fact Sheet 3.0*, January 2000.

4. Soil Survey Division Staff, Soil Conservation Service, Soil Survey Manual, 1993.

5. Upper Salinas-Las Tablas Resource Conservation District and the San Luis Obispo County Planning and Building Department, Cover Up Story – Erosion Control Handbook, Third Edition, July 2005.

APPENDIX A

STORM WATER CONSTRUCTION BMPs

Definition and Purpose

Seeding effectively minimizes the area of a construction-site prone to erosion and should be used everywhere the sequence of construction operations allows vegetation to be established.

Appropriate Applications

- Selection of species for a specific site should be based on soils, moisture conditions, light levels, whether or not concentrated flows will occur, land use, and level of maintenance.
- Seeding has advantages including lower establishment costs, wide selection of seed mixes (both native and nonnative) and is easier to install on different sites.
- The use of seeding mixtures that includes native grass species should be considered for improving wildlife habitat, aesthetics and be approved by the RE.

Limitations

- Cannot be implemented during off-season. When construction continues into the fall season, a heavy mulch application is preferable to vegetative stabilization.

Standards and Specifications

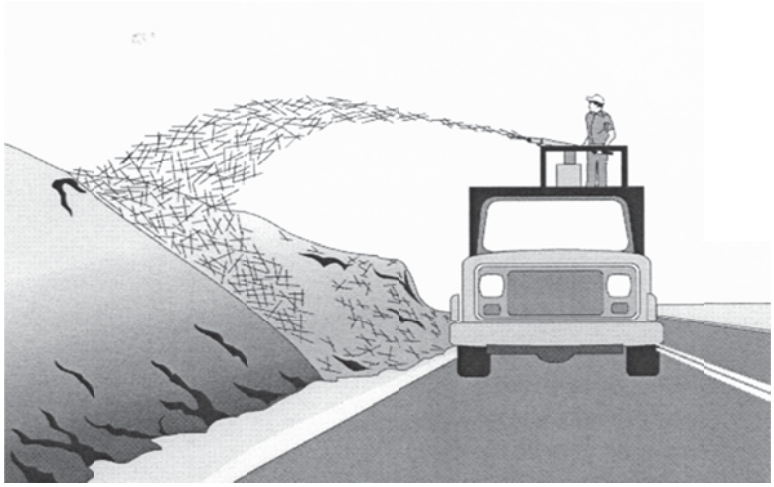
- Seed should be applied uniformly with a cyclone seeder, drill or cultipacker seeder, or hydro-seeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydro-seeding is used, the seed and mulch must be applied in separate applications.
- In hydro-seeding, often used on larger areas, seeds are mixed with water and fertilizer where necessary, and fiber mulch is sprayed onto the soil in a second separate layer.
- Temporary seeding should be applied on exposed soil where additional work (grading, etc.) is not scheduled for more than 45 days. Temporary

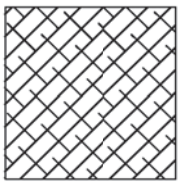
seeding of annual grasses may be used for up to 12 months to temporarily stabilize exposed areas. Soil amendments may be needed to establish vegetation on some construction areas.

- Permanent seeding should be applied if the areas will be idle for more than a year.
- Structural erosion and sediment control practices such as diversions and sediment traps shall be installed and stabilized with temporary seeding prior to grading the rest of the construction site.
- Idle areas should be seeded as soon as possible after grading or shall be seeded within 7 days. Several applications of temporary seedling are necessary on typical construction projects.
- The seedbed should be pulverized and loosened to ensure the success of establishing vegetation. However, temporary seeding should not be postponed if ideal seedbed preparation is not possible. Disturbed sites require seedbed preparation to loosen the soil surface for water infiltration and root penetration.
- Establishing nonnative planting sometimes requires a fertilizer application to initiate growth. Apply these nutrients according to soil test recommendations.

Maintenance and Inspection

- Seeded areas must be kept consistently moist for the first three weeks after planting. Mulch aids in retaining soil moisture.
- Areas seeded in nonnative grasses should be mowed once or twice a year to prevent establishment of woody plants.
- Native grass seedlings should be mowed two or three times the first year at a height of six inches to reduce competition from annual weeds. They should be mowed once a second year, and burned or mowed every other year thereafter.





Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

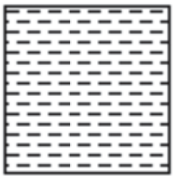
- Organic mulches, such as straw and wood fiber, have been found to be very effective in preventing soil erosion.
- Wood fiber mulch should consist of raw hard or soft timber that has been run through a mechanical chipper hammer mill or tub grinder. Wood should be free of mold, dirt, sawdust and foreign material.
- Do not use material that may contain competing weed and grass seeds. Decomposition of some wood products can tie up significant amounts of soil nitrogen; make it necessary to modify fertilization rates to add fertilizer with the mulch.
- Straw mulch may be disc-anchored into the soil, hydraulically bonded, or covered with netting and stapled. The choice of materials and anchoring of mulches should be based on slope steepness and length, soil conditions, season, type of vegetation, and size of area.
- Straw mulch is most commonly used in conjunction with seeding.
- The following methods of anchoring mulch may be used:
    - A mulch-anchoring tool: is a tractor-drawn implement designed to punch mulch into the soil. A mulch-anchoring tool provides maximum erosion control with straw.
    - A regular farm disc, weighted and set nearly straight, may be used instead, but it will not do a job comparable to the mulch-anchoring tool.
    - The disk should not be sharp enough to cut through the straw. These methods are limited to slopes no steeper than 3:1, where equipment can operate safely.

Maintenance and Inspection

- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.
- Continue inspections until vegetation is established.
- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

Mulch Tackifier

EC-03



Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

- Hydraulic mulches vary in type, composition and additives, and range from light- to heavy-duty.

- Form a mat-like barrier that controls water- and wind-induced erosion.

- Although an infinite number of application rates could be used, one or two rates are generally specified.
  - One rate is the blanket equivalent rate required for erosion control, usually between 3,000 and 4,000 pounds per acre, depending on manufacture recommendation for percent slope and length.
  - The other rate, generally half the erosion blanket control rate, is especially useful for enhancing seed germination and soil stabilization of 6:1 or flatter slopes.

- These types of fiber mulch are typically used as hydro-mulch:
  - *Bonded Fiber Matrix* refers to a continuous layer or elongated wood fiber strands that are held together by water-resistant bonding agent to form a water absorbing crust.
  - *Wood Fiber Mulch* when sprayed on the soil, the virgin wood fibers and tackifier that comprise this biodegradable mulch form a blotter-like cover that readily absorbs water and allows infiltration to the underlying soil.
  - *Blended Mulch* consists of specially prepared, biodegradable, shredded paper particles, wood fibers and tackifier.

- Tackifiers are necessary to hold fibers together and to keep them from washing or blowing away. Primary tackifier types include:
  - *Latex Base* the composition, by weight, of the latex emulsion polymer should be 48 percent styrene, 50 percent butadiene, and 2 percent additive.
  - *Guar Gum* tackifiers should consist of a minimum of 95 percent guar gum by weight; the remainder should consist of dispersing and cross-linking additives.
  - *Other Tackifiers* include, but are not limited to: water-soluble natural vegetable gums blended with gelling and hardening agents, or a water-soluble blend of hydrophilic polymers, viscosifiers, sticking aids, and other gums.

Maintenance and Inspection

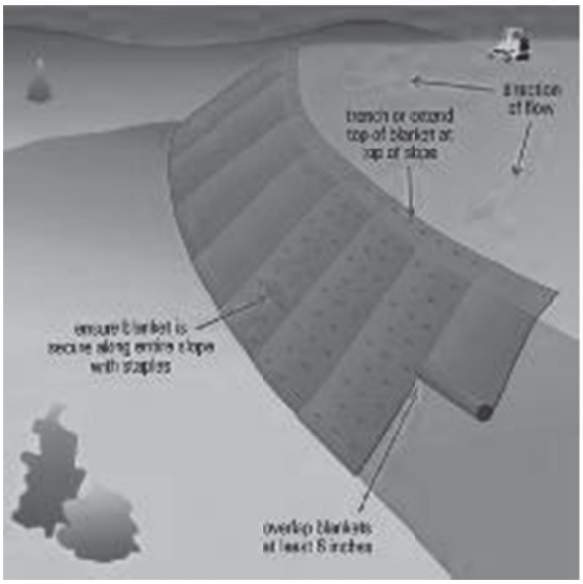
- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.

- Continue inspections until vegetation is established.

- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

Erosion Control Blankets

EC-04



Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

- Erosion-control blankets are biodegradable, open-weave blankets used for establishing and reinforcing vegetation on slopes, ditch bottoms, and shorelines. Several categories are provided with different service application and specific uses as shown below.

- Category 1 – Very temporary
  - Used in flat areas, shoulder drain outlets, roadway shoulder, lawns, and mowed areas.
  - Acceptable types include straw, wood fiber, and rapidly degradable netting on one side.

- Category 2 – One season
  - Use on slopes 1:3 and steeper less than 50 ft. long, ditches with gradients 2% or less, and/or flow velocities less than 6.5fps.
  - Acceptable types include straw, wood fiber and/or netting on one side.

- Category 3 – One season
  - Use on slopes with 1 verticle:3 horizontal and steeper, more than 50 ft. long, ditches with gradients 3% or less, and/or flow velocities less than 6.5 fps.
  - Acceptable types include straw, wood fibers, and/or netting on two sides.

- Category 4 – Semi-permanent
  - Use in ditches with gradients 4% or less, flow velocities less than 8.0 fps, and/or flow depth 6 inches or less.
  - Acceptable types include straw/coconut, wood fiber, and/or netting on two sides.

- Category 5 – Semi-permanent
  - Use in ditches with gradients 8% or less, flow velocities less than 15.0 fps and flow depth less than 8 inches, and/or watercourse banks within the normal flow elevation.
  - Acceptable types include coconut fiber, and/or netting on two sides.

Maintenance and Inspection

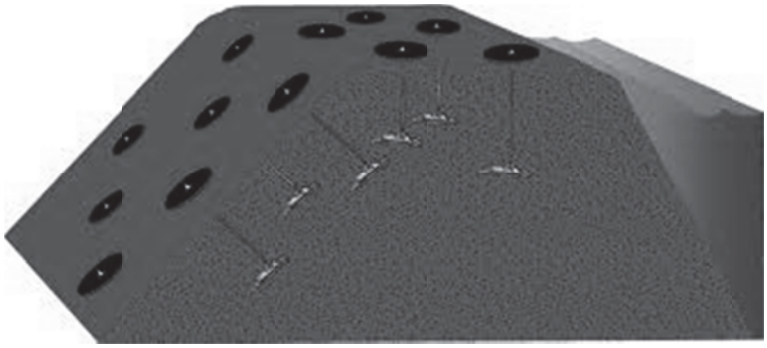
- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.

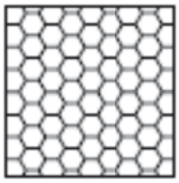
- Continue inspections until vegetation is established.

- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

Turf Reinforcement Mats

EC-05





Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
-
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

- Turf-reinforcement mats (TRMs) are synthetic, non-degradable mats that are usually buried to add stability to soils. They come in a wide range of designs and have been proven to be valuable on slopes and in channel-lining applications.

- TRMs are designed to be permanent and often are filled with soil and vegetated with installed.

- Turf-reinforcement matting consisting of non-degradable, three-dimensional matrix materials should be used with expected velocities of 15 fps and shear stress of 8lbs/ft 2. Beyond these velocities the shears, vegetated structures such as articulated clock, cable concrete and crib walls, should be considered.

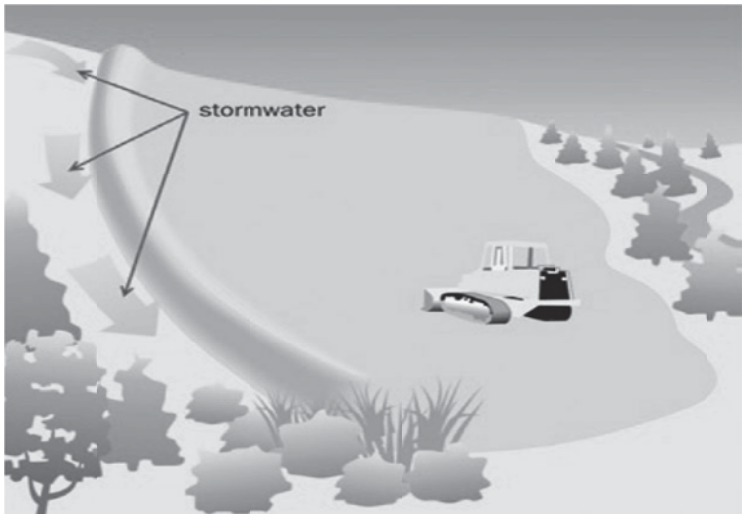
- A TRM may have a biodegradable component intermixed with the synthetic portion to aid plant establishment.

Maintenance and Inspection

- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric

Diversion Berms & Ditches

EC-06



Definition and Purpose

A temporary berm or ridge made of soil (or course aggregate), with or without a diversion channel.

Appropriate Applications

- Used to intercept and divert runoff to desired location such as towards a sediment trap or a slope drain.
- Used to divert runoff from areas where it might damage property, cause erosion, or interfere with the establishment of vegetation.
- Used along the top edges of cuts and fills to protect the embankment.
- Used as a temporary feature.

Limitations

- Berms to intercept and divert runoff should not be used where the drainage area exceeds 10 acres.
- Should not be used in areas with slopes steeper than 10 percent.

Standards and Specifications

- Location should be determined by considering outlet conditions, topography, land use, soil type, length of slope, and areas where seepage might be a problem.
- Berms shall have a minimum height of 18 inches, side slope of 2:1 or flatter, and minimum base width of 4.5 feet
- All berms shall have an uninterrupted positive grade to stabilized outlet. The outlet should be capable of conveying concentrated runoff into an undisturbed, stabilized area at a non-erosive velocity.
- Berms shall be compacted as needed to prevent unequal settlement.

- Diversion channels shall be excavated or shaped to line, grade, and cross-section as indicated in the plans and as required to meet the criteria as specified.

- All trees, brush, stumps, obstruction, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the diversion.

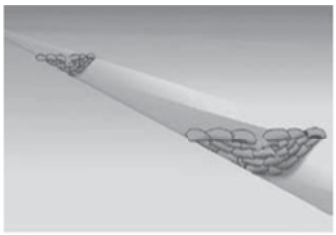
- Berms and diversion channels should be stabilized with riprap, fabric turf reinforcement or appropriate measure for protection against erosion and failure.

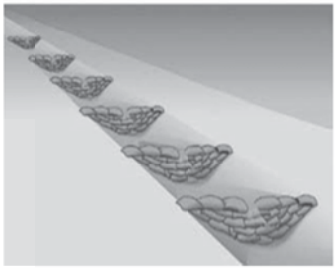
Maintenance and Inspection

- Inspection and maintenance must be provided periodically and after each rain or snowfall event that causes runoff.

- Sediment accumulated against the berm should be removed periodically and properly disposed of.

- Erosion along the berm should be repaired with the stabilization measure re-established.





Definition and Purpose

Check dams can either be permanent or temporary barriers that prevent erosion and promote sedimentation by slowing flow velocities and/or to filtering concentrated flows.

Appropriate Applications

- Concentrated-flow areas such as:
  - Vegetated ditches; and
  - Swells.
- Nearly all instances, erosion control blankets should be used in conjunction with check dam.

Limitations

- Requires periodic repair and sediment removal upstream of check dams.
- Removal of temporary check dams can be difficult.

Standards and Specifications

- Check dams provide relatively good removal of coarse and medium-size sediment from runoff.
- Rock check dams should consist of well-graded stone consisting of a mixture of rock sizes. For example: Class IV riprap with the percent less than the specified rock diameter.
  - 100% < 24 inches
  - 75% < 15 inches
  - 50% < 9 inches
  - 10% < 4 inches
- A triangular silt dike is a triangular-shaped foam block covered with geotextile fabric. When laid in the channel, it will form a check dam. Triangular silt dikes are light weight and easy to install and maintain

- To increase the effectiveness of rock check dams, a shallow pool upstream of the check is recommended. The pool allows additional sediment storage.

- Silt fence check dams can also be used if fence is the sliced in type with monofilament fabric.

- Other types of silt fence (such as preassembled) should not be used.

Maintenance and Inspection

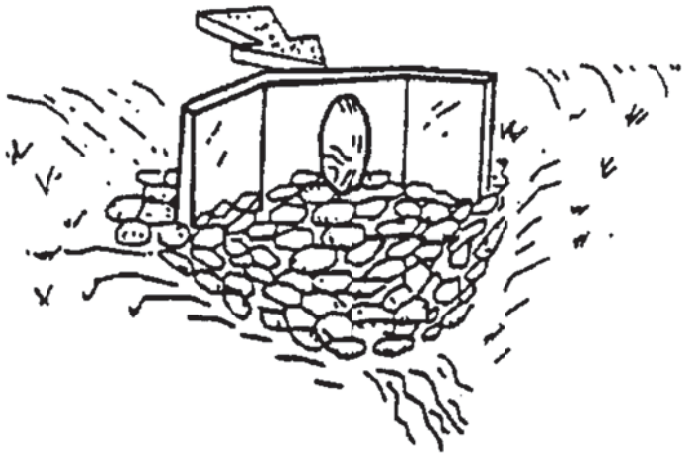
- Inspect check dams and drainage ways for damage after each runoff event.

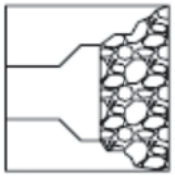
- Anticipate submergence and deposition above the check dam and erosion from high flows around the edges of the dam.

- Correct all damage immediately. If significant erosion occurs between dams, additional protection may be required. This may include a protective riprap liner in that portion of the channel or placing additional check dams.

- Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam.

- Add rock or remove and replace rock to dams as needed to maintain design height, cross section, and flow through characteristics.





Definition and Purpose

These devices are placed at pipe outlets to prevent scour and reduce the velocity and/or energy of storm water flows.

Appropriate Applications

- These devices may be used at the following locations:
  - Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels.
  - Outlets located at the bottom of mild to steep slopes.
  - Outlets subject to short, intense flows of water, such as flash floods.
  - Points where lined conveyances discharges to unlined conveyances.
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Loose rock may have stones washed away during high flows.
- Grouted riprap may break up in areas of freeze and thaw.
- If there is not adequate drainage, and water builds up behind grouted riprap, it may cause the grouted riprap to break up due to the resulting hydrostatic pressure.

Standards and Specifications

- There are many types of energy dissipaters. Please note that this is only one example and the RE may approve other types of devices proposed by the contractor.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction.

- Carefully place riprap to avoid damaging the filter fabric.

- For proper operation of apron:
  - Alight apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in upper section of apron.

  - If size of apron riprap is large, protect underlying filter fabric with a gravel blanket.

- Outlets on slopes steeper than 10% shall have additional protection.

Maintenance and Inspection

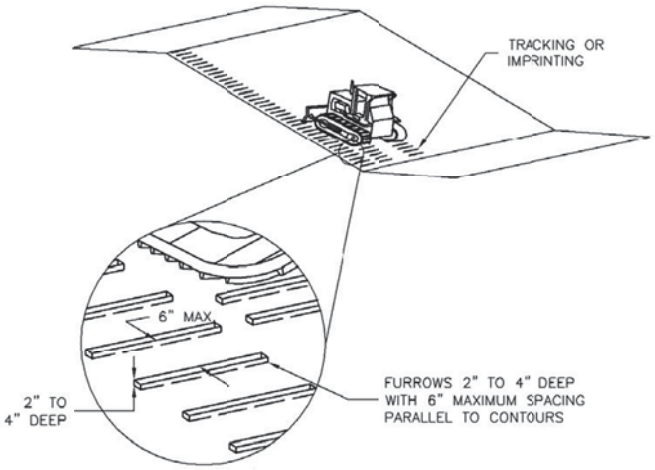
- Inspect temporary measures prior to the rainy season, after rainfall events, and regularly (approximately once per week) during the rainy season.

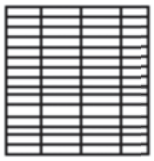
- Inspect apron for displacement of the riprap and/or damage to the underlying fabric. Repair fabric and replace riprap that has washed away.

- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.

- Temporary devices shall be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Grading Techniques





Definition and Purpose

Land grading is reshaping the ground surface to planned grades as determined by engineering survey evaluation and layout.

Appropriate Applications

- The grading plan establishes drainage areas, directs drainage patterns and affects runoff velocities.
- The grading plan forms the basis of the erosion-and-sedimentation-control plan.
- Land grading and lot benching is to reduce the slope and length of slope of disturbed areas within a subdivision development, thereby reducing the erosion potential and establish drainage patterns on individual lots within a subdivision at the time of rough grading.

Limitations

- High cost, if extensive amounts of grading are required to properly grade site.

Standards and Specifications

- The lots should be graded so that runoff flows towards the cut slope of the lot located on the uphill side of the lot. This prevents runoff from being directed over a steep slope to a lower lot.
- Runoff from each lot should be directed to the street, a road ditch or another stable outlet rather than onto an adjacent lot.
- The final grade of the building site should be as flat as possible.

- Key considerations that affect erosion and sedimentation include:
  - Deciding which slopes are to be graded.
  - When the grading work will start and stop.
  - The degree and length of finished slope.
  - Where and how excess material will be disposed of, and where borrow is needed.
  - Refer to Scheduling Best Management Practice for the proper phasing of grading operations.

- Consider how to take advantage of undisturbed water-disposal outlets before storm drains or other constructed outlets are installed.

- Before grading begins, decisions must be made on the gradient of cut-and-fill slopes, how they will be protected from runoff, how they will be stabilized and how they will be maintained.

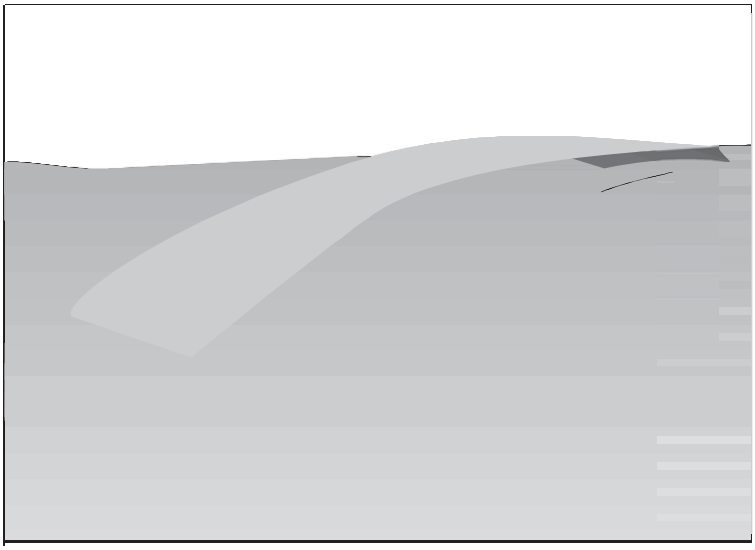
Maintenance and Inspection

- Periodically check all graded areas and the supporting erosion control practices, especially after heavy rainfalls (or as required by the NPDES permit).

- Promptly remove all sediment from diversions and other water-disposal practices. If washouts or breaks occur, repair them immediately.

- Prompt maintenance of small, eroded areas before they become significant gullies is an essential part of an effective erosion-and-sedimentation-control plan.

- If an extended period of time passes before homes are built, maintenance of the vegetation may be required. Maintenance may include mowing or spraying to control noxious weeds.



Definition and Purpose

The dry swales (also called a grassed swale) is a type of open vegetated channel used to treat and attenuate the water quality volume of storm water runoff as well as convey excess storm water downstream. The dry swale is related to the wet swale, though the latter does not have an underlying filtering bed.

Appropriate Applications

- Good option for residential settings, as they discourage long-standing water.
- The entire water quality of volume of a given storm is temporarily held in a pool or series of pools created by permanent check dams or ditch blocks.
- May be treated as an extension to a mown lawn or be planted in native grasses and allowed to grow longer.
- An under drain system is also installed under the soil bed. Typically this under drain system is created by a gravel layer which encases a perforated pipe.

Limitations

- If designed or installed improperly (e.g., if proper slopes or sufficiently dense vegetation are not achieved) dry swales will not effectively remove sediment and pollutants.
- Individual dry swales can treat only a small area.
- May not be applicable to sites with many driveway culverts or extensive sidewalk systems.

- Do not appear to be effective in reducing bacteria levels in storm water, and appear to remove only modest amounts of phosphorus. Few studies are available to gauge their effectiveness.

- Require more maintenance than curb and gutter systems.

- Roadside dry swales are subject to damage from off-street parking and snow removal.

Standards and Specifications

- Siting
  - Individual dry swales should be designed to treat relatively small, flat drainage areas. If the swales employ slopes steeper than four percent or if they are used to treat areas larger than five acres, the flow velocity becomes too great for effective treatment and erosion of the channel is more likely.
  - Dry swales can be sited on most soils. Native soils with low permeability, however, will need to be amended or replaced to increase infiltration.
  - The bottom of the swale should be at least three feet above groundwater in order to prevent the swale bottom from remaining moist or groundwater from being contaminated.
  - If used in areas with steep slopes, dry swales must generally run parallel to contours in order to be effective.

- Channel Profile and Size
  - The swale should have a trapezoidal or parabolic cross section with relatively flat side slopes (less than 3:1 horizontal:vertical). This maximizes the wetted perimeter – the length along the edge of the channel cross-section that is in contact with the runoff – and thus enhances treatment.
  - Shallow side slopes also allow any runoff entering the swale from the side to receive some treatment. A filter strip or other vegetated buffer should be located on both sides of the swales, particularly if nearby impervious surfaces drain into the swale.
  - The flat channel bottom should be located on both sides of the swale, particularly if nearby impervious surfaces drain into the swale.

Maintenance and Inspection

- Dray swales must be maintained in order to function properly. Plans should include a detailed inspection and maintenance plan, identify owners and indicate those responsible for maintenance.

- Annually or Semiannually
  - Inspect swale several times the first few months to ensure grass cover is establishing well. If not, reseed or plant an alternative species. Once established, continue to inspect semiannually for erosion problems.
  - At least annually inspect pea gravel diaphragm for clogging from excess sediment; remove sediment and correct associated problems.
  - Remove trash and debris accumulated in the swale.

- As Needed (frequent)
  - Mow turf grass to a height of about four inches. If native grasses are used, mow only once a year in early spring to remove dead vegetation. Mowing the native grasses the first year is critical in order to eliminate competition from annual weeds.
  - With infrequent mowings, remove the clippings.

- As Needed (infrequent)
  - Remove sediment buildup on the bottom of swale once it has accumulated to 25 percent of the original design volume.
  - Reseed as necessary to maintain dense vegetation.
  - Grass in the swales should be fertilized rarely, if at all, to avoid unnecessary export of nutrients. If application of lime or fertilizer is deemed necessary on the basis of soil tests, it should be done only in cool spring or fall weather and only with a no phosphorus fertilizer.

Preserve Existing Vegetation

EC-11

Definition and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Appropriate Applications

- Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

  - Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multiyear project where grading can be phased.

  - Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.

  - Areas where local, state, and federal government require preservation such as vernal pools, wetlands, marshes, certain oak trees, etc. these areas are usually designated on the plans, or in the specifications, permits, or environmental documents.

  - Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Limitations

- Requires forward planning by the owner/developer, contractor, and design staff

- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.

- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Standards and Specifications

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.
- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Maintenance and Inspection

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage or protected trees still occurs, maintenance guidelines described below should be followed:

- Verify the protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy.

- Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.

- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.

- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.

- If bark damage occurs, cut back on loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged areas as much as possible.

- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.

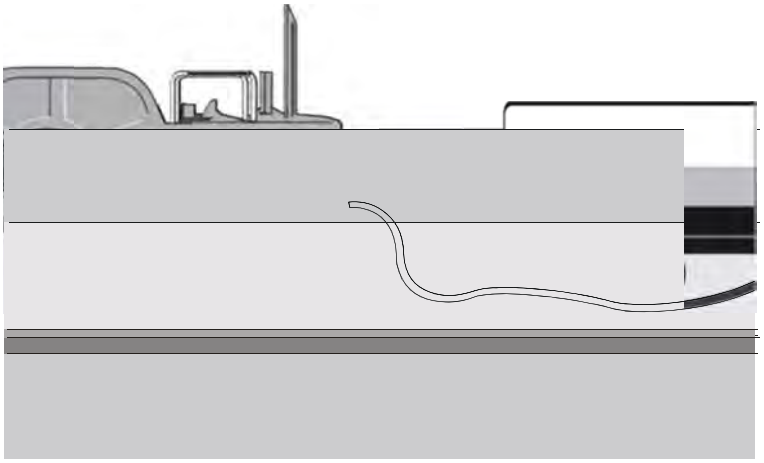
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery. Fertilize trees in the late fall or early spring.

  - Apply fertilizer to the soil over the feeder roots and in accordance with label instruction, but never closer than 3ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

Equipment Fueling

GN-01



F

Definition and Purpose

Vehicle and equipment fueling procedures and practices are designed to minimize or eliminate the discharge of fuel spills and leaks into storm drain systems or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

Limitations

- Onsite vehicle and equipment fueling shall only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

- When fueling must occur onsite, the contractor shall select and designate an area to be used, subject to approval of the Resident Engineer (RE).
- Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Dedicated fueling areas shall be protected from storm water run-on and runoff, and shall be located at lease 15m (50 ft.) from downstream drainage facilities and water courses. Fueling must be performed on level-grade areas.
- Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips. Fueling operations shall not be left unattended.
- Protect fueling areas with berms and/or dikes to prevent run-on, runoff,

and to contain spills.

- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts. Ensure the nozzle is secured upright when not in use.
- Fuel tanks shall not be “topped-off.”
- Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.
- Absorbent spill clean-up materials shall be available in fueling and maintenance areas and used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be removed promptly and disposed of properly.
- Federal, state, and local requirements shall be observed for any stationary ground storage tanks.
- Mobile fueling of construction equipment throughout the site shall be minimized. Whenever practical, equipment shall be transported to the designated fueling area.

Maintenance and Inspection

- Fueling areas and storage tanks shall be inspected regularly.
- Keep an ample supply of spill cleanup material on the site.
- Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.

Temporary Restroom

GN-02

Definition and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to storm water from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Appropriate Applications

- All sites with no permanent sanitary facilities or where permanent facility is too far from activities.
- Locate portable toilets in convenient locations throughout the site.
- Prepare level, gravel surface and provide clear access to the toilet for servicing and for on-site personnel.
- Construct earth berm perimeter, control for spill/protection leak.

Limitations

No limitations

Standards and Specifications

- Portable toilets must be provided if not permanent facilities are available.
- Sanitary facilities must be provided on the site in close proximity to areas where people are working.
- Locate portable toilets a minimum of 20 feet away from drainage facilities, water source and from traffic circulation.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging

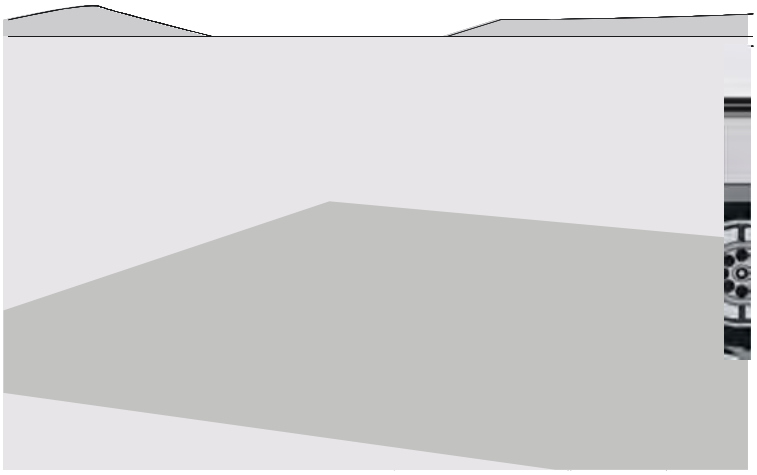
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.
- Portable toilets must be secured to the ground by stakes or other suitable means to prevent them from turning over during high winds or by accident.

Maintenance and Inspection

- Portable toilets should be maintained in good working order by licensed service with daily observation for leak detection.
- Regular waste collection should be arranged with licensed service.
- All waste should be deposited in sanitary sewer system for treatment with appropriate agency approval.

Equipment Maintenance

GN-03



EM

Definition and Purpose

Ideally, vehicle maintenance should occur in garages, not on active construction sites. However, if these activities are required to be performed onsite, operators should follow appropriate BMPs to prevent hazardous wastes from being discharged to surface or ground waters.

Appropriate Applications

- Vehicle maintenance BMPs prevents construction site spills of fuel, or coolant from contaminating surface or ground water. They apply to all construction sites.

Limitations

- Connection cost to sanitary sewers.
- Construction costs for an enclosed maintenance area.
- Labor costs for hazardous waste storage, handling, and disposal.

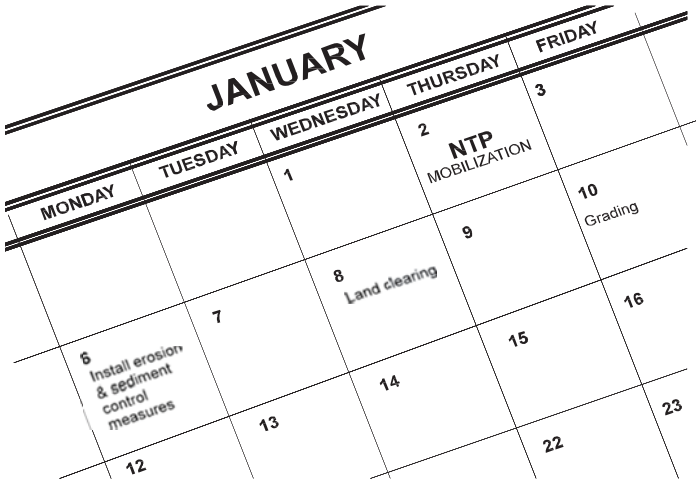
Standards and Specifications

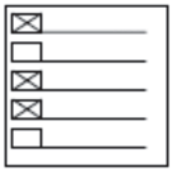
- Designate special paved and bermed or otherwise contained vehicle repair areas to prevent illicit discharges into storm water areas for vehicle repair.
- Dispose of all used oil, antifreeze, solvents, and other automotive-related chemicals according to manufacturer instructions.
- Used oil, antifreeze, and some solvents can be recycled at designated facilities, but other chemicals must be disposed of at a hazardous waste disposal site.
- Absorbent spill clean-up materials and spill kits shall be available and shall be disposed of properly.

Maintenance and Inspection

- Vehicle maintenance operations produce substantial amounts of hazardous and other wastes that require regular disposal.

- Clean up spills and dispose of cleanup materials immediately.
- Inspect equipment and storage containers regularly to identify leaks or signs of deterioration.





Definition and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Appropriate Applications

- Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Standards and Specifications

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.

- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs

- Sediment control BMPs
- Tracking control BMPs
- Wind erosion control BMPs
- Non-storm water BMPs
- Waste management and materials pollution control BMPs

- Include dates for activities that may require non-storm water discharges such as dewatering, saw cutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.

- Work out the sequencing and timetable for the start and completion of each time such as site clearing and grubbing, grading, excavation, paving, foundations pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.

- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.

- Monitor the weather forecasts for rainfall.

- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.

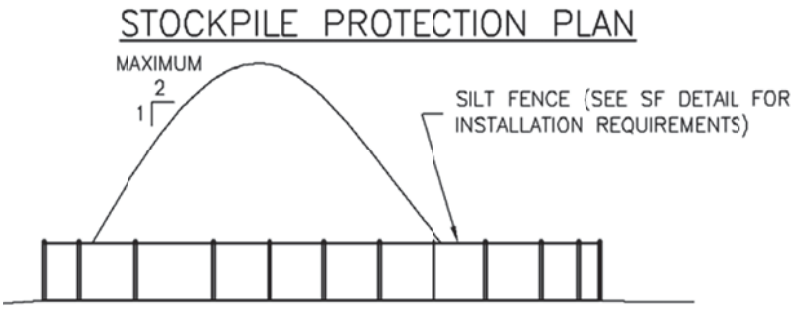
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.

Maintenance and Inspection

- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.

- Amend the schedule when changes are warranted.

- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.



Definition and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt binder (so called "cold mix" asphalt) and pressure treated wood.

Appropriate Applications

Implemented in all projects that stockpile soil and other materials.

Limitations

No limitations.

Standards and Specifications

- Protection of stockpiles is a year-round requirement.
- Locate stockpiles a minimum of 15 m (50 ft.) away from concentrated flows of storm water, drainage courses, and inlets.
- Implement wind erosion control practices as appropriate on all stockpiled material.
- Stockpiles of contaminated soil shall be managed.
- Bagged materials should be placed on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials shall be protected further as follows:

Soil stockpiles:

- During the rainy season, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.

- o During the non-rainy season, soil stockpiles shall be covered and protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base:

- During the rainy season, the stockpile shall be covered or protected with a temporary perimeter sediment barrier at all times.

- During the non-rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix":

- During the rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times.

- During the non-rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable materials prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with copper, chromium and arsenic or ammonical, copper, zinc, and arsenate:

- During the rainy season, treated wood shall be covered with plastic or comparable material at all times.

- During the non-rainy season, treated wood shall be covered with plastic or comparable material and shall be placed on pallets prior to the onset of precipitation.

Protection of Active Stockpiles

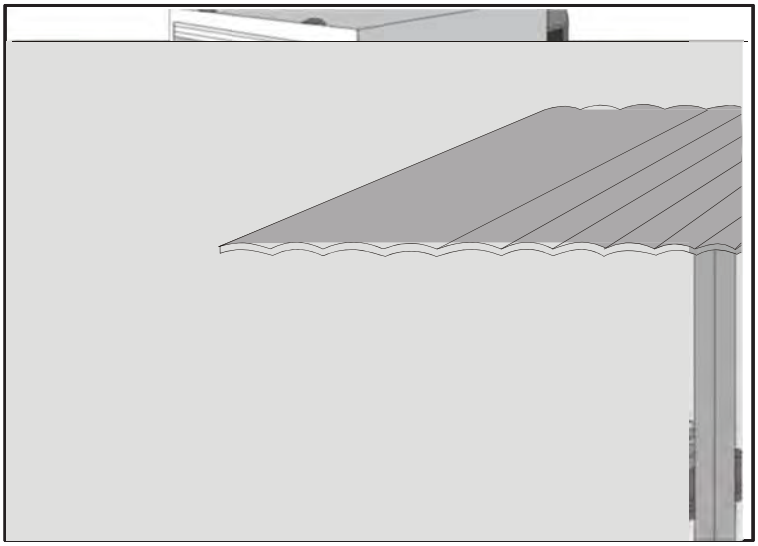
Active stockpiles of the identified materials shall be protected further as follows:

- All stockpiles shall be covered, stabilized, or protected with a temporary linear sediment barrier prior to the onset of precipitation.

- Stockpiles of "cold mix" shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Maintenance and Inspection

- Repair and/or replace perimeter controls and covers as needed or as directed by the RE, to keep them functioning properly. Sediment shall be removed when sediment accumulation reaches one-third (1/3) of the barrier height.



Definition and Purpose

These practices are to be implemented for proper handling and storage of materials in order to prevent spills or leaks into the storm drains or watercourses.

Appropriate Applications

These practices are implemented at all construction sites where delivery and storage of material may be detrimental to the environment. Materials of concern are not limited to soil, pesticides, herbicides, fertilizers, petroleum, products, asphalt and concrete components, and hazardous chemicals such as acids, paints, solvents, adhesives, and curing compounds.

Standards and Specifications

- Designated storage sheds must meet building and fire code regulations.
- Material safety data sheets (MSDS) shall be made available for all materials.
- Training for proper material handling and storage techniques shall be required.
- Provide sufficient separation between storage containers to allow cleanup and emergency response.
- Provide storage for materials indoor away from rainfall and offsite flows, whenever possible.
- Chemically incompatible materials should not be stored together or in the same storage facility.
- Label all materials properly and maintain current legible labels; also

maintain a current inventory of all material delivered and stored.

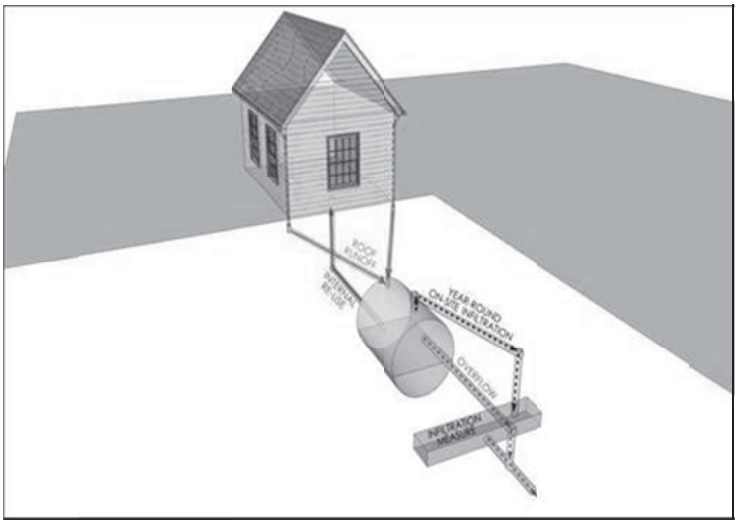
- Hazardous materials must comply with federal, state, local, and CDOT HazMat requirements.
- Provide above ground secondary containment for all hazardous chemical materials.
- Immediately contain and cleanup any spills.

Maintenance and Inspection

- In general, areas shall be inspected on a regular basis (once per week).
- Inspect equipment and vehicles routinely for leaks.
- Maintain an ample supply of cleanup materials at all designed storage and handling areas where leaks and spills are likely to occur.
- Spot-check material storage and handling areas for compliance.
- Material storage areas shall be routinely checked for accumulation of non-labeled materials and spills.
- Identify spills or leaks into the storm drain at or near CDOT work areas and report to the CDOT illicit discharge hotline.
- Containment structures or other perimeter controls shall be inspected routinely and repaired when sign of degradation are visible.

Pre-Treatment Inlet Box

PC-01



PT

Definition and Purpose

A structure designed to be incorporated into storm water conveyance systems for pretreatment of storm water flows. Pretreatment devices are primarily used to filter sediment and, in some cases, oil and grease from runoff before flows are discharged to receiving waters or final treatment structures. Some pretreatment devices have the capacity to remove other floatable contaminants.

Appropriate Applications

Vendor supplied (often prefabricated) and other pretreatment devices help reduce the pollutant load flowing to other treatment structures (such as detention basins or wetland) and offer removal of bulk pollutant.

Limitations

- Must be sized carefully to achieve design removal efficiencies.
- Efficiency may be affected by size of sediment and rate of sediment loading.
- Must ensure regular maintenance to achieve design removal efficiencies.
- Not appropriate for terminal treatment for runoff from LUHPPLs or discharges near or to critical areas, unless determined suitable for such use by TARP or STEP.

Standards and Specifications

- Independent third-party scientific verification of the ability of the proprietary system to meet water quality treatment objectives and/or to provide water quantity control (channel or flood protection).
- Proven record of longevity in the field.
- Proven ability to function in weather conditions (climate, rainfall

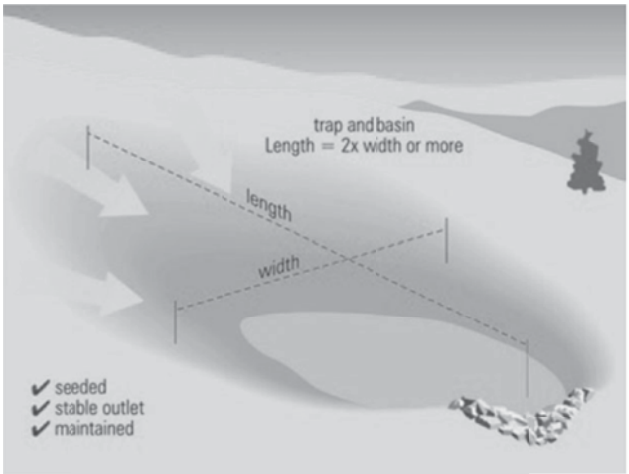
patters, soil types, etc.).

- At least 15 storm events must be sampled.
- The study must be independent or independently verified (i.e., may not be conducted by the vendor or designer without third-party verification).
- The study must be conducted in the field, as opposed to laboratory testing.
- Field monitoring must be conducted using standard protocols which require proportional sampling both upstream and downstream of the device.
- Concentrations reported in the study must be flow-weighted.
- The propriety system or device must have been in place for at least one year at the time of monitoring.

Maintenance and Inspection

The proper operation and maintenance of a storm water management structure includes frequent inspection and scheduled maintenance activities. Man power and budget needed to perform the maintenance must be anticipated.

Detention Basin



DB

Definition and Purpose

Excavated basins used for the short term impoundment of storm water runoff with controlled release through an outlet structure and predevelopment flow rates.

Appropriate Applications

- Controls peak runoff for 2 and 10-year storms.

Limitations

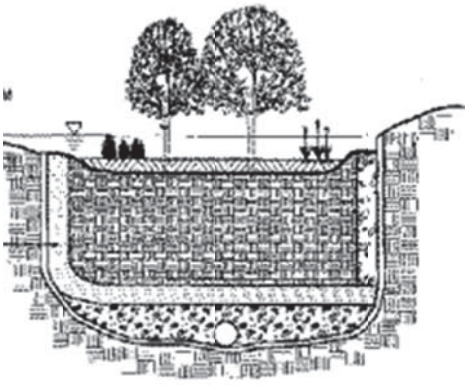
- Not effective at removing dissolved pollutants.
- Limited ability to remove total suspended soils with limited settling of solids.
- Potential for suspension of solids.
- Susceptible to frequent clogging.
- Limited or no recharge.

Standards and Specifications

- Should be design with two stage outlet structure. One stage to regulate peak flows from large storms and another stage to detain the 2-year and 10-year storm.
- Need differential elevation between inlet and outlet.
- Outlet pipe must be protected to prevent clogging.
- Emergency spillway required to bypass runoff from large storms.

Maintenance and Inspection

- Inspect at least once a year.
- Remove sediment to prevent re-suspension.



RB

Definition and Purpose

Retention Systems are presented as a general concept, rather than a specific type of BMP. The retention concept uses biological activity to filter/clean storm water.

Appropriate Applications

- When properly designed and maintained, more likely to be aesthetically pleasing than other types of filtration or infiltration systems due to incorporation of plants.
- Reduces the volume of runoff from a drainage area.
- Can be very effective for removing fine sediment, trace metals, nutrients, bacteria, and organics.
- Layout of retention facilities can be very flexible, and the selection of plant species can provide for a wide variety of landscape designs.
- Can be applied in many different climates and geologic environments, with some minor design modifications.
- Ideally suited to many highly impervious areas, such as parking lots.
- Reduces the size and cost of downstream storm water control facilities and/or storm drain systems by infiltrating storm water in upland areas.
- Reduces downstream flooding and protects stream bank integrity.
- Provides groundwater recharge and base flow in nearby streams.
- Reduces local flooding.
- Can be used as a storm water retrofit, by modifying existing landscaped areas, or if a parking lot is being resurfaced.

Limitations

- Cannot be used to treat large drainage areas, limiting their usefulness for some sites.
- Susceptible to clogging by sediment, and therefore pretreatment is a necessary part of design.
- Tend to consume space (usually around 5 percent of the area that drains to them).
- Incorporating retention into a parking lot design may reduce the number of parking spaces available.
- Construction cost can be relatively high compared with other storm water treatment practices.

Standards and Specifications

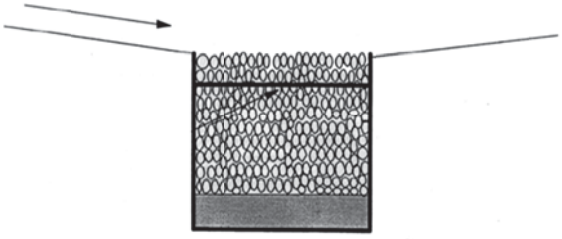
- Retention should usually be used on small sites. When used to treat larger areas, they tend to clog.
- Retention areas are best applied to areas with relatively shallow slopes.
- Retention areas can be applied in almost any soils, since in some design, runoff percolates through a made soil bed, and is returned to the storm water system.
- Retentions should be separated from the water table to ensure that the groundwater does not intersect with the bottom of the retention area.

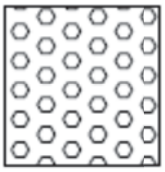
Maintenance and Inspection

Retention requires seasonal landscaping maintenance. In many cases, retention areas require intense maintenance initially until plants are established, but less maintenance in the long term. Designers should ensure that the retention area is easily accessible for maintenance.

Infiltration Trenches

PC-04





Definition and Purpose

Infiltration trenches are shallow (3-to 12-foot) excavations that are lined with filter fabric and filled with stone to create underground reservoirs for storm water runoff from a specific design storm.

Appropriate Applications

- Ideally, construction of the infiltration trench should take place after the site has been stabilized.
- Diversion berms or silt fence should be placed around the perimeter of the infiltration trench during all phases of construction. Sediment and erosion controls should be used to keep runoff and sediment away from the infiltration trenches.
- Heavy equipment should not operate on the surface location where the infiltration trenches are planned. Soil compaction will adversely affect the performance of the trench, and infiltration trench sites should be roped off and flagged. During excavation and trench construction, only light equipment such as backhoes or wheel and ladder type trenchers should be used to minimize compaction of the surrounding soils.
- During and after excavation, all excavated materials should be placed downstream, away from the infiltration trench, to prevent re-depositing during runoff events.

Limitations

- Potential failure due to improper siting, design and lack of maintenance especially if pretreatment is not incorporated into the design.
- Depending on soil conditions, land use in the water shed and groundwater depth, a risk of groundwater contamination may exist.
- Not appropriate for industrial or commercial sites where the release of large amounts or high concentrations of pollutants is possible.
- Susceptible to clogging by sediment, resulting in frequent maintenance.
- Requires frequent inspection and maintenance.

Standards and Specifications

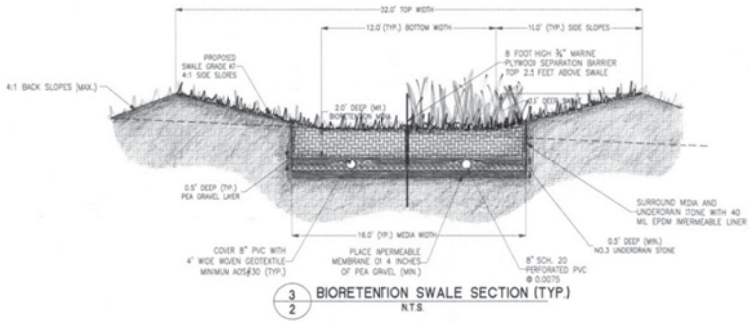
- Infiltration trenches in this BMP Section refer to surface trenches that collect sheet flow from a few lots or properties as opposed to soak away pits which are primarily used for single lot application.
- Careful site selection (discussed further in the Site Sensitivity Analysis Section).
- Treatment of sheet flow from a small drainage area.
- Incorporation of pretreatment and a bypass for high flow events.
- Good construction techniques that prevent smearing, over-compaction, and operation of the trench during the construction period.
- Performance of regular maintenance.

Maintenance and Inspection

- The use of pretreatment BMPs will significantly minimize maintenance requirements of the trench itself. Removing accumulated sediment from a sump pit or a vegetated swale is considerably less difficult and less costly than rehabilitating a trench. Eventually, the infiltration trench should be rehabilitated, but this time span is relative to the effective performance of the trench. With appropriate design and aggressive preventive maintenance, this rehabilitation may not be necessary for a decade or more.
- Once the trench has gone online, inspections should occur after every major storm for the first few months to ensure proper stabilization and function. Water levels in the observation well should be recorded over several days to check trench drainage.
- After the first few months of operations, the infiltration trench should be inspected at least twice per year. Important items to check for include: accumulated sediment, leaves and debris in the pretreatment device, clogging of inlet and outlet pipes and ponded water both inside and on the surface of the infiltration trench.
- When ponding occurs at the surface or in the trench, corrective maintenance is required immediately.
- Clogging in trenches occurs most frequently on the surface. Grass clippings, leaves, and accumulated sediment should be removed routinely from the surface of the trench. If the clogging appears only to be at the surface, it may be necessary to remove and replace the first layer of stone aggregate and the filter fabric.

- Ponded water inside the trench (as visible from the observation well) after 24 hours or several days after a storm event often indicates that the bottom of the trench is clogged, indicating a percolation failure from the bottom. In this case, all of the stone aggregate and filter fabric or media must be removed. Accumulated sediment should be stripped from the trench bottom. At this point the bottom may be scarified or tilled to help induce infiltration. New fabric and clean stone aggregate should be refilled.

- Pretreatment devices associated with trenches should be inspected and cleaned at least twice a year and ideally every other month.



Definition and Purpose

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade.

Appropriate Applications

- If properly designed, vegetated, and operated, buffer strips can provide reliable water quality benefits in conjunction with high aesthetic appeal.
- Flow characteristics and vegetation type and density can be closely controlled to maximize BMP effectiveness.
- Roadside should act as effective buffer strips when slope and length meet criteria described below.

Limitations

- Can be difficult to avoid channelization.
- May not be appropriate for industrial sites or locations where spills may occur.
- Grassed swales cannot treat a very large drainage area. Large areas may be divided and treated using multiple swales.
- A thick vegetative cover is needed for these practices to function properly.
- They are impractical in areas with step topography.
- They are not effective and may even erode when flow velocities are high, if the grass cover is not properly maintained.
- Swales are more susceptible to failure if not properly maintained than

other treatment BMPs.

Standards and Specifications

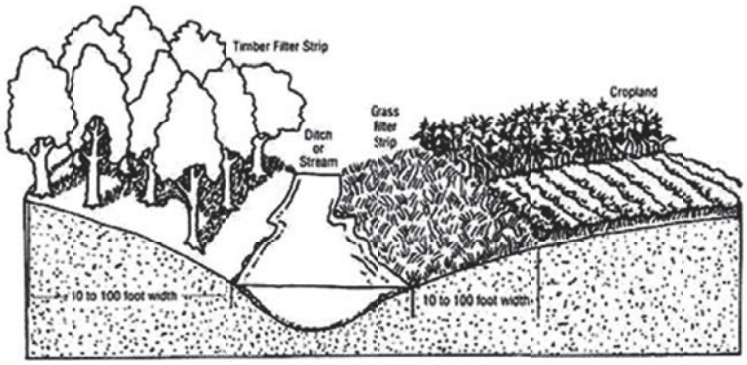
- Flow rate based design determined by local requirements or sized so that 85% of the annual runoff volume is discharged at less than the design rainfall intensity.
- Swale should be designed so that the water level does not exceed 2/3rds the height of the grass or 4 inches, whichever is less, at the design treatment rate.
- Longitudinal slopes should not exceed 2.5%.
- Trapezoidal channels are normally recommended but other configurations, such as parabolic, can also provide substantial water quality improvements and may be easier to mow than designs with sharp breaks in slope.
- A diverse selection of low growing plants that thrive under the specific site, climatic, and watering conditions should be specified. Vegetation whose growing season corresponds to the wet season is preferred. Drought tolerant vegetation should be considered especially for swales that are not part of a regulatory irrigated landscaped area.

Maintenance and Inspection

- Inspect swales at least twice annually for erosion, damage to vegetation, and sediment and debris accumulation preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the swale is ready for winter.
- Mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.
- The need for litter removal is determined through periodic inspection, but litter should always be removed prior to mowing.
- Sediment accumulating near culverts and in channels should be removed when it builds up to 75 mm (3 in.) at any spot, or covers vegetation.
- Regularly inspect swales for pools of standing water.

Vegetative Buffer Strips

PC-06



Definition and Purpose

Grassed buffer strips (vegetated filter strips, filter strips, and grassed filters) are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Filter strips function by slowing runoff velocities and allowing sediment and other pollutants to settle and by providing some infiltration into underlying soils.

Appropriate Applications

- Strips are generally effective in reducing the volume and mass of pollutants.
- Roadside shoulders should act as effective buffer strips when slope and length meet criteria described below.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Buffer strips cannot treat a very large drainage area.
- A thick vegetative cover is needed for these practices to function properly.
- Buffer or vegetative filter length must be adequate and flow characteristics acceptable or water quality performance can be severely limited.
- Vegetative buffers may not provide treatment for dissolved constituents except to the extent that flows across the vegetated surface are infiltrated into the soil profile.
- This technology does not provide significant attenuation of the increased volume and flow rate of runoff during intense rain events.

Standards and Specifications

- Maximum length (in the direction of flow towards the buffer) of the tributary area should be 60 feet.

- Slopes should not exceed 15%
- Minimum length (in direction of flow) is 15 feet.

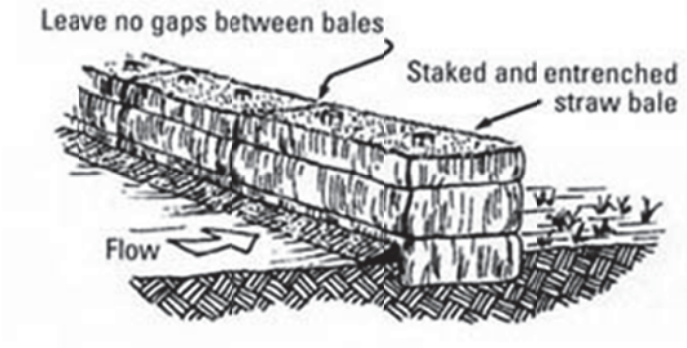
Width should be the same as the tributary area.

- Either grass or a diverse selection of other low growing, drought tolerant, native vegetation should be specified. Vegetation whose growing season corresponds to the wet season is preferred.

Maintenance and Inspection

Filter strips require mainly vegetation management. Typical maintenance and frequencies include:

- Inspect strips at least twice annually for erosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before major fall run-off to be sure the strip is ready for winter.
- Recent research on bio filtration swales, but likely applicable to strips indicates that grass height and mowing frequency have little impact on pollutant removal.
- Regularly inspect vegetated buffer strips for pools of standing water.



Definition and Purpose

A temporary sediment barrier consisting of a row of entrenched and anchored straw, or hay bales.

Appropriate Applications

- Used as temporary sediment barriers and filter along the toe of fills or around inlets.

Limitations

- Do not use along the toe of fills where the size of the drainage area is greater than one quarter acre per 100 feet of barrier length; maximum slope length and gradient behind the barrier is 100 feet and 50 percent (2:1), respectively.
- Do not use where effectiveness is required for more than 3 months. Useful life of erosion bale is approximately 1 year; the bales may have to be replaced one or more times during construction.
- Under no circumstances should erosion bale be constructed in flowing streams or in swales where flows are likely to exceed 1 cfs, and where the contributing drainage area is greater than 1 acre.
- Not to be used where the control of sediment is critical; in high-risk areas; in areas where they cannot be entrenched as required and firmly anchored; and areas where ponded water could flow onto the roadway.

Standards and Specifications

- The erosion bale must be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked, the excavated soil must be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.
- Each bale must be securely anchored by at least two wooden stakes driven toward the previously laid bale to force the bales together. Stakes should be driven toward the previously laid bale to force the bales together. Stakes should be driven into the ground a minimum 1

foot to securely anchor the bales.

- All bales must be either wire-bound or string-tied, and they should be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales (in order to prevent deterioration of bindings).

- The gaps between bales should be filled by wedging with straw to prevent water from escaping between the bales. The main objective is to obtain tight joints. Erosion bales will not filter sediment or pond water if the water is allowed to flow between, around, or under the bales.

- Along toe of fills, install the erosion bales along a level contour and leave enough area behind the barrier for runoff to pond and sediment to settle. A minimum distance of 5 feet from toe of the fill is recommended.

Maintenance and Inspection

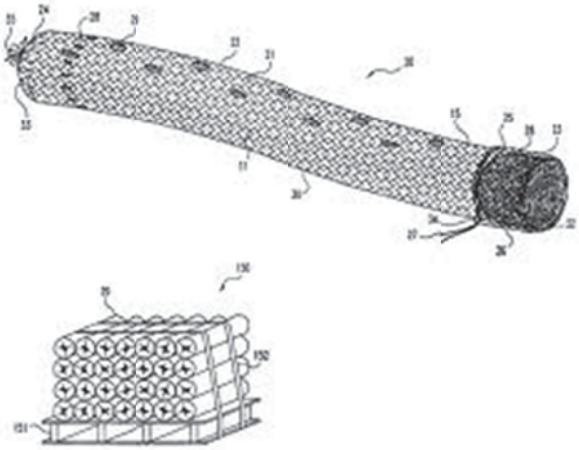
- Erosion bales deteriorate quickly and therefore, inspections during construction should be frequent. Repair or replacement should be made promptly as needed.

- Erosion bales must be removed when they have served their usefulness.

- Trenches where erosion bales were located should be graded and stabilized.

- Sediment accumulation against the erosion bale barrier shall be removed when it reaches half the exposed bale height. Sediments removed must be properly disposed.

- Replace erosion bale as necessary but a minimum of once each year.



Definition and Purpose

Erosion logs filled with rock and other filter material used for erosion and sediment control.

Appropriate Applications

- Used upstream of curb inlets to filter sediment laden runoff. Logs of various lengths can be accommodated with multiple logs installed in series. Typical placement of a log is upstream of an inlet, in the gutter flow line, and also at the entrance of an inlet.
- Used as check dams in ditches and swales for erosion control until vegetative cover is established.
- Used as a temporary feature.

Limitations

- Logs are manufactured BMPs. Refer to the manufacturer for guidelines on limitations.
- Do not use in ditches and swales with continuous flow.

Standards and Specifications

Installation for Check Dam Applications

- When using as a check dam, it should be placed in straight sections to minimize the potential for erosion in the channel bend.

Installation for Curb Inlet Protection (Upstream of inlet)

- Logs will be used upgradient of inlet perpendicular to and flush with the curb.
- The maximum height of the curb log should be less than the top of the curb opening. This is to allow overflows to occur during large rainfall

events even though sediment-laden runoff will enter the storm drainage system.

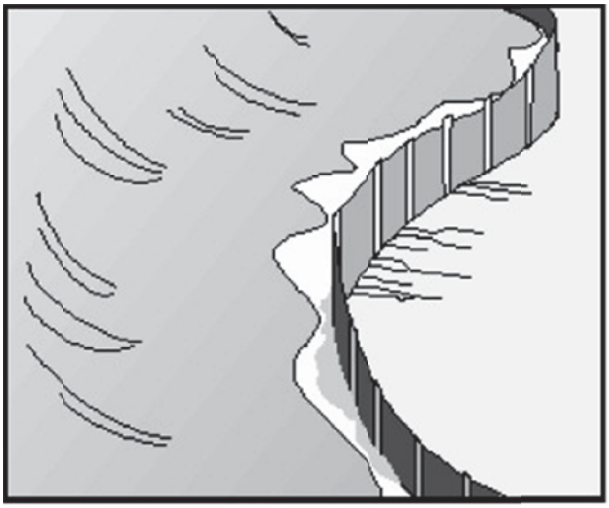
- No less than two 10-inch diameter logs must be used in sequence, spaced no more than five feet apart, upgradient of inlet. No less than six logs shall be used if the 4-inch log is chosen.
- Incline at 30 degrees from perpendicular, opposite the direction of flow.

Installation of Curb Inlet Protection

- Identify curb opening dimensions to determine how many logs are required.
- Place the log(s) end-to-end along the curb inlet opening.
- Angle the ends of the log(s) towards the curb inlet opening.

Maintenance and Inspection

- Inspect logs daily for cutes, abrasions, and proper installation, replace or reposition daily. Remove sediment and dispose in a proper manner.
- Discontinue use if logs create a traffic hazard.



Definition and Purpose

A silt fence is a temporary barrier designed to retain sediment on the construction site. It consists of a geotextile attached to supporting posts that are trenched into the ground.

Appropriate Applications

- Install silt fences on the contour (as opposed to up and down a hill) and construct so that flow cannot bypass the ends.
- Ensure that the drainage area is not greater than ¼ acre per 100 feet of fence.
- Make the fence stable for the 10-year peak storm runoff.
- By design, ensure that the depth of impounded water does not exceed 2 feet at any point along the fence.

Limitations

- Not effective for concentrated flows less than 1.0 cfs.
- Proper installation is critical for effective performance.
- Frequent inspection and maintenance required.

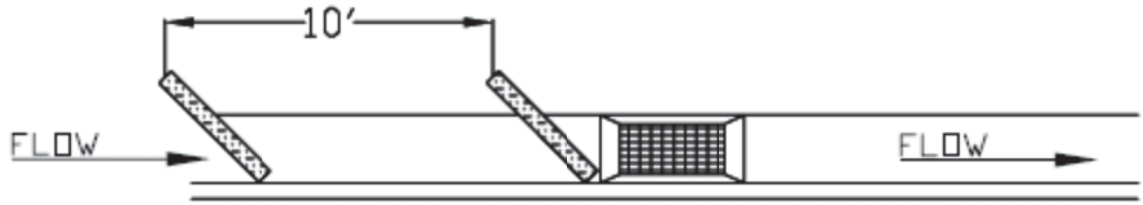
Standards and Specifications

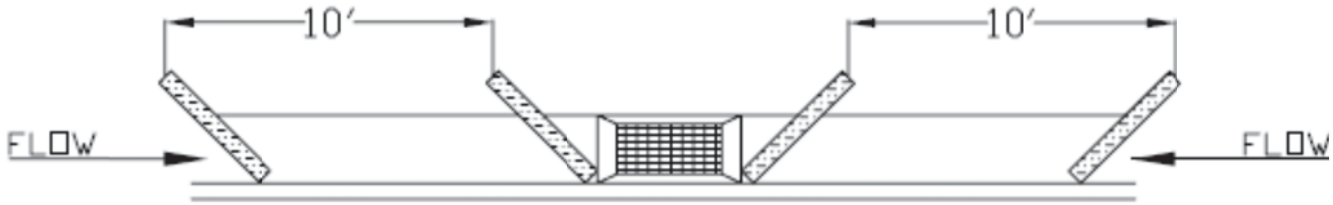
- Install silt fences on the contour (as opposed to up and down a hill) and construct so that flow cannot bypass the ends.
- Ensure that the drainage area is no greater than ¼ acre per 100 feet of fence.
- Make the fence stable for the 10-year peak storm runoff.

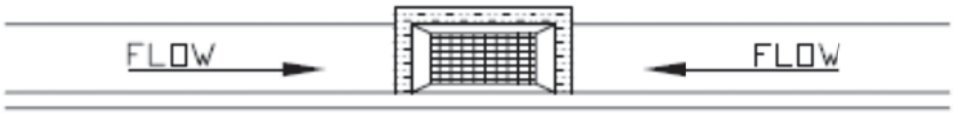
- By design, ensure that the depth of impounded water does not exceed 2 feet at any point along the fence.
- Types
  - The following three types of silt fences are used for different circumstances.
    - *Heavy Duty:* Use at locations where extra strength is required, such as near water bodies, on areas with unstable wetland soils, steep slopes, highly erodible soils, or high runoff; and on areas that are inaccessible to equipment.
    - *Preassembled:* For light-duty applications, to protect temporary construction or to supplement the other types of silt fence. This type is installed with plow-type equipment with pre-attached stakes spread at 6-foot to 8-foot intervals.
    - *Machine-Sliced Installation:* Appropriate for general use during site grading and to protect ***critical*** areas. Preferred for most sites due to the effective installation method.

Maintenance and Inspection

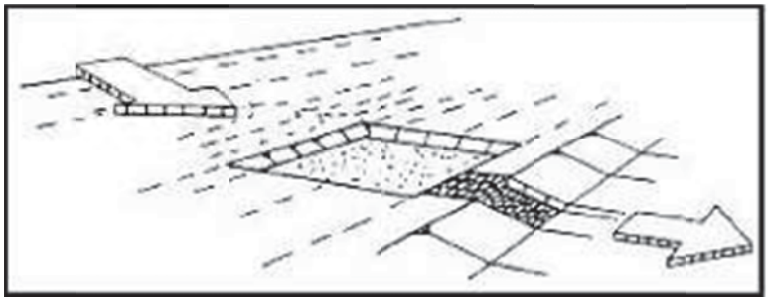
- Improper geotextile is used.
- Geotextile is insufficiently embedded.
- No wire is used on heavy-duty type fence.
- No geotextile overlap exists on heavy-duty fence.
- Soil is not compacted on machine-sliced fence.
- Soil is turned over and/or loosened due to inadequate equipment for machine-sliced fence.
- Components (geotextile, posts, wire, etc.) are inadequately fastened.
- Posts are incorrectly spaced.
- Inspect silt fences at least once a week and after each rainfall, or as required by the NPDES permit. Make any required repairs immediately. Repair scoured areas on the back side of fence at this time to prevent future problems.
- Should the fabric of the silt fence collapse, tear, decompose or otherwise become ineffective, replace it within 24 hours of discovery.

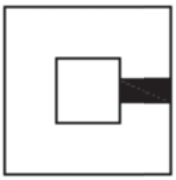






- BAGS SHALL BUTT TIGHTLY AGAINST THE FACE OF THE CURB.
- BAGS SHALL NOT EXTEND IN ROAD MORE THAN 1 FOOT.
- RESHAPE BAGS AS NEEDED, REPLACE IF TORN.
- STEEP GRADES WILL REQUIRE MORE CHECK DAMS ALONG THE CURB AND GUTTER.
- INSPECT DAILY.
- REMOVE SEDIMENT WHEN IT REACHES ONE-THIRD OF GRAVEL BAG HEIGHT.
- CLEAN CURB AND GUTTER AND REMOVE GRAVEL BAG AT THE END OF THE PROJECT.





Definition and Purpose

Sediment traps are temporary settling ponds having a simple spillway outlet structure stabilized with geotextile and riprap. Sediment traps do not include an outlet structure and pipe.

Appropriate Applications

- Generally the most reliable measures used for treating sediment-laden runoff from construction sites.
- Temporary sediment traps provide good control of coarse sediment and are moderately effective for trapping medium-sized sediment particles.
- They have a low trapping efficiency for fine silt and clay particles.

Limitations

- Sediment basins are relatively large, generally requiring a good deal of site area.
- It can be difficult to keep a sedimentation basin functioning during the entire construction phase.
- On high-density sites, sedimentation basins are often eliminated before the site is fully stabilized.
- Improper construction and maintenance greatly reduces their effectiveness.
- Not particularly effective for fine silts or clay soils, or for intense rainfall events, which can re-suspend sediment within the trap or basin.

Standards and Specifications

- Placed near the perimeter of construction-sites.
- If higher trapping efficiency is desired, a temporary sediment basin with a larger storage volume and longer detention time should be used.
- Trapping efficiency should be optimized within site constraints as described for sediment basins.

Maintenance and

- Sediment basins require routine maintenance to remain effective as

Inspection

sediment traps. When sediment reaches the maximum level assumed in the design (usually one-third to one-half the basin volume), it must be removed.

- Excavated sediment must be placed in a location where it will not easily be eroded again. In addition to sediment cleanout, sediment basins should be inspected after storms to determine whether the embankment or spillways sustained any damage that requires repair.
- Excavate if the outlet becomes clogged with sediment, it should be cleaned to restore its flow capacity.
- The structure should be inspected after significant runoff events to check for damage or operational problems. Once the contributing drainage area has been stabilized, the structure can be removed or, if possible, modified to become part of the permanent control features.
- Maintain any diversion structure on berm.

SB

Definition and Purpose

A temporary *sedimentation basin* is a controlled storm water release structure, formed by constructing an embankment of compacted soil across a drainage way and installing an outlet structure and outlet pipe. The purpose of the basin is to detain the sediment-laden runoff from disturbed areas long enough for the majority of the sediment to settle out in the basin. This reduces sediment transport off-site.

Appropriate Applications

- Properly sized sediment basins are relatively effective for trapping medium- and course-grained sediment particles. However, fine silts and clays that are suspended in runoff are very difficult to trap.

Limitations

- Sediment basins are relatively large, generally requiring a good deal of site area.
- It can be difficult to keep a sedimentation basin functioning during the entire construction phase.
- On high-density sites, sedimentation basins are often eliminated before the site is fully stabilized.
- Improper construction and maintenance greatly reduces their effectiveness.
- Not particularly effective for fine silts or clay soils, or for intense rainfall events, which can re-suspend sediment within the trap or basin.

Standards and Specifications

- Trapping efficiency should be optimized within site constraints. This can be accomplished by:
  - Incorporating design criteria which maximize trapping efficiency.
  - Presenting this information clearly in construction documents.
  - Assuring construction is performed according to those documents.

- The value of increased sediment basin size diminishes rapidly once a certain size of basin is reached. For this reason, extraordinary methods such as chemical flocculation may be needed to achieve a very high level of control.

- Sediment basins as with all sediment controls should be used in conjunction with erosion control practices such as temporary seeding to reduce the total amount of sediment washing to them.

Maintenance and Inspection

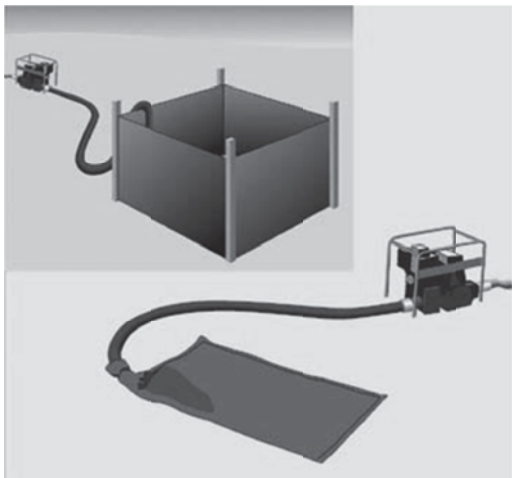
- Sediment basins require routine maintenance to remain effective as sediment traps. When sediment reaches the maximum level assumed in the design (usually one-third to one-half the basin volume), it must be removed.

- Excavated sediment must be placed in a location where it will not easily be eroded again. In addition to sediment cleanout, sediment basins should be inspected after storms to determine whether the embankment or spillways sustained any damage that requires repair.

- Excavate if the outlet becomes clogged with sediment, it should be cleaned to restore its flow capacity.

- The structure should be inspected after significant runoff events to check for damage or operational problems. Once the contributing drainage area has been stabilized, the structure can be removed or, if possible, modified to become part of the permanent control features.

- Maintain any diversion structure on berm.



DW

Definition and Purpose

A settling device to treat water from dewatering activities.

Appropriate Applications

- Used to remove sediments from dewatering activities.
- Used as temporary feature.

Limitations

- May not be needed if the water is discharged to a well-stabilized vegetated area. The stabilized area should be capable of filtering sediment while at the same time withstanding the velocity of the discharged water without eroding. A minimum filtering length of 75 feet is recommended for the stabilized area.
- Dewatering operation will require and must comply with all applicable permits.
- Never construct in wetlands.

Standards and Specifications

- Recommended structure consists of an excavated basin surrounded by a perimeter control such as erosion bales or a berm. The excavated area should be at least 3feet deep. The excavated portion will serve for wet storage, and the remainder will provide dry storage.
- The structure's storage volume (measured from the bottom of the excavation to the crest of the riprap weir) can be calculated as follows:

  Storage volume (ft^3) = Pump discharge (gal/min) x 0.24

  The above rate allows for a continuous pumping time of 3 hours. When water reaches the outlet crest, pumping must stop until the water drains down and additional capacity is made available.
- The wet storage area may be dewatered into a well-vegetated area, but

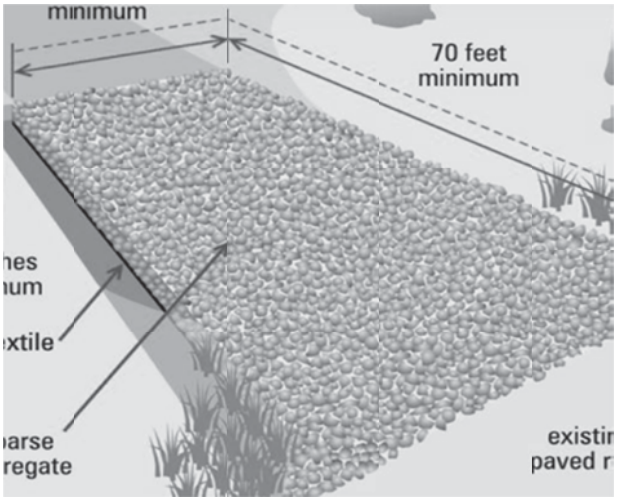
only after a minimum detention time of 6 hours.

Maintenance and Inspection

- Sediments should be removed once they have accumulated to one-half of the excavated depth and properly disposed of.

Stabilized Construction Entrance

SC-08



Definition and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Appropriate Applications

- Use at construction sites:
  - Where dirt or mud can be tracked onto public roads.
  - Adjacent to water bodies.
  - Where poor soils are encountered.
  - Where dust is a problem during dry weather conditions.
- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Site conditions will dictate design and need.

Standards and Specifications

- Limit the points of entrance/exit to the construction sites.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.

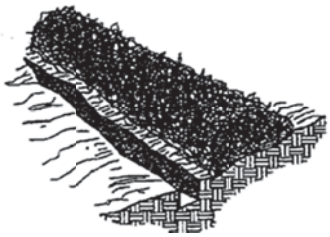
- Design stabilized entrance/exit to support the heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. The use of asphalt concrete (AC) grindings for stabilized construction access/roadway is not allowed.
- Use of constructed/manufactured steel plates with ribs for entrance/exit access is allowed with written approval from the RE.
- If aggregate is selected, place crushed aggregate over geotextile fabric to as least 300 mm (12in) depth, or place aggregate to a depth recommended by the RE. Crushed aggregate greater than 75 mm (3 in) and smaller than 150 mm (6 in) shall be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Implement BMP SC-12, “Street Sweeping and Vacuuming” as needed and as required.
- Require all employees, subcontractors, and suppliers to utilize the stabilized construction access.
- All exit locations intended to be used continuously and for a period of time shall have stabilized construction entrance/exit BMPs (SC-08 “Stabilized Construction Entrance”).

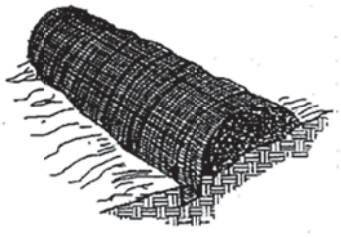
Maintenance and Inspection

- Inspect routinely for damage and assess effectiveness of the BMP. Remove aggregate, separate and dispose of sediment of construction entrance/exit is clogged with sediment or as directed by the RE.
- Keep all temporary roadway ditches clear.
- Inspect for damage and repair as needed.

Brush Barrier

SC-09





Definition and Purpose

A temporary sediment barrier constructed at the perimeter of a disturbed area from the residue materials available from clearing and grubbing the site, and generally covered with filter fabric.

Appropriate Applications

- Used for the purpose of intercepting and retaining sediment from disturbed areas of limited extent.
- Used to prevent sediment from leaving the site.
- Used as a temporary feature.

Limitations

- Should be used only in area of sheet or very low flow.
- Should not be used in a developed area where they could be a visual problem.

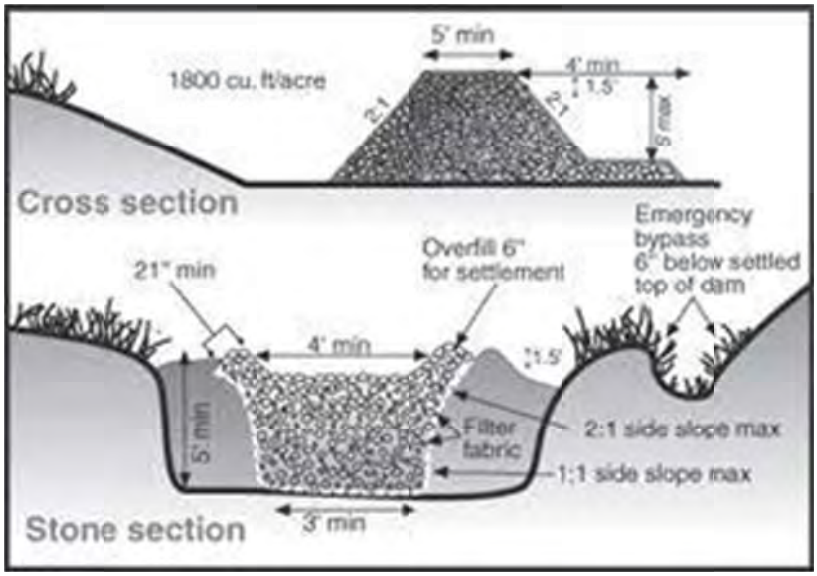
Standards and Specifications

- Height of a brush barrier shall be 3 feet minimum.
- The width of a brush barrier shall be a minimum of 5 feet at its base. The size of brush barriers may vary considerably based upon the amount of material available and the judgment of the designer.
- The barrier shall be constructed by pilling brush, stone, root mat, and other material from the clearing process into a mounded row on top of the contour.
- The filter fabric shall be cut into lengths sufficient to lie across the barrier from its upslope base to just beyond its peak. Where joints are necessary, the fabric shall be spliced together with a minimum 6 inches overlap and securely sealed.

Maintenance and Inspection

- Inspect frequently during construction, and repair or replace promptly as needed.
- Remove when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

- Sediment accumulated behind the barrier shall be removed when it reaches half the exposed brush barrier height and disposed of properly.



Definition and Purpose

A gravel bag barrier is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

Appropriate Applications

- As a linear sediment control measure:
  - Below the tow of slopes and erodible slopes.
  - As sediment traps at culvert/pipe outlets.
  - Below other small cleared areas.
  - Along the perimeter of a site.
  - Down slope of exposed soil areas.
  - Around temporary stockpiles and spoil areas.
  - Parallel to a roadway to keep sediment off paved areas.
  - Along streams and channels.
- As linear erosion control measures:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
  - At the top of slopes to divert runoff away from disturbed slopes.

- As check dams across mildly sloped construction roads.

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the filter, possibly causing flooding if sufficient spaces does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Berms may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Standards and Specifications

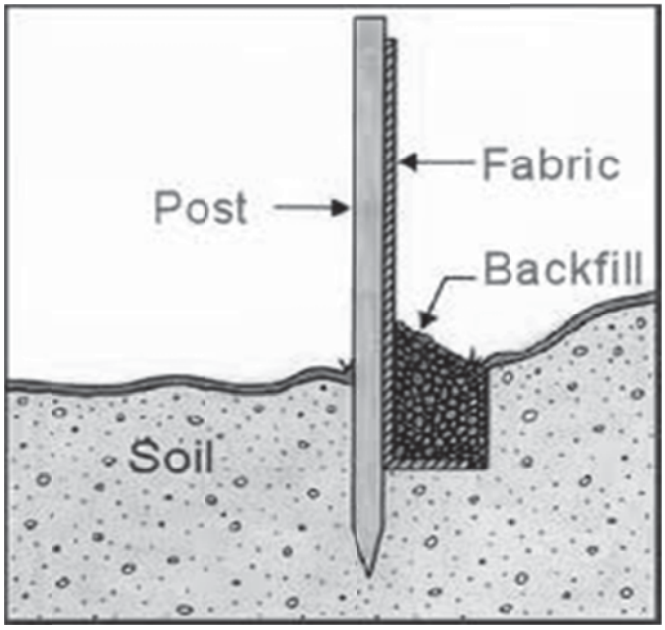
- Locate gravel bag berms on level contours.
  - Slopes between 20:1 and 2:1 (H:V): gravel bags should be placed at a maximum interval of 50 ft. (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: gravel bags should be placed at a maximum interval of 25 ft. (a closer spacing is more effective), with the first row placed the slope toe.
- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, consider moving the gravel bag barriers away from the slope toe to facilitate cleaning. To prevent flows behind the barrier, bags can be placed perpendicular to the berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.

Maintenance and Inspection

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week

intervals during the non-rainy season.

- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site of disposed of at an appropriate location.
- Remove gravel bag berms when no longer needed. Remove sediment accumulation and clean, re-grade, and stabilize the area. Removed sediment should be incorporated in the project or disposed of.



Definition and Purpose

A silt barrier is a sediment control device is made of foam sewn into a woven geo-synthetic fabric. Triangular in shape, it is 10 to 14 inches high in center, with a 20- to 28-inch base. This BMP can be used to provide settling and/or reduction in water velocity/erosive forces, and it can be used as an alternative to straw bales, silt fence, and rock check dams for containing erosive soils at constructions sites.

Appropriate Applications

- May be used in the following applications:
  - Ditch Check Dam: can be installed in roadway ditches and drainage ditches.
  - Diversion Dam: can be installed as diversion dams or dikes.
  - Continuous Barrier: can be attached end to end to form a continuous barrier in rough terrain.
  - Ponds and Streams: can be used as a positive barrier around streams, ponds, and wetlands.
  - Drop Inlet Protection: can be installed for protecting drop inlets.
  - Temporary Lined Ditch: can be used as a temporary lined ditch.
- This BMP may be used for perimeter protection and in combination with other barriers.

- Used downstream of disturbed areas subject to sheet and rill erosion where drainage area is not greater than 0.25 acre per 100 linear feet of barrier and the slope behind the barrier should be no steeper than 2:1. On relatively flat slopes, the maximum disturbed slope distance should not exceed 100 feet. The allowable disturbed slope distance decreases as the slope gets steeper.

Limitations

- This BMP should not be used:
  - Where flow volume or velocity inhibit BMP function.
  - As a filter.

Standards and Specifications

- Install with the long flap upstream.
- Install to prevent water from going around or under the BMP.
- Install along the contour.
- Anchor with adhesive on asphalt or other hard surfaces, or with staples or stakes on soil or soft surfaces.

Maintenance and Inspection

- During construction, inspect daily and during storm events. Make any required repairs.
- Sediment should be removed when the deposits reach half the height of the silt barrier and properly disposed of.
- Prior to removal, evaluate the site to determine if the silt barrier is no longer needed (the area has stabilized and potential of sediment-laden water exiting the area has passed) and remove sediment buildup in front of the silt barrier. Depending upon replacement, vegetation of site may be necessary.

Street Sweeping/Vacuuming

SC-12

Definition and Purpose

When properly designed and implemented, sweeping programs can significantly reduce street and parking lot contributions to pollution loads.

Appropriate Applications

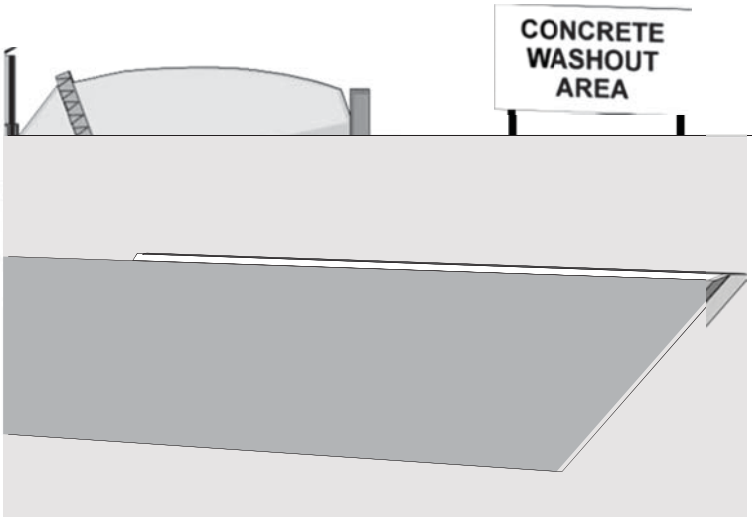
- These practices should be implemented anywhere sediment is tracked from the project sit onto public or private paved roads, typically at points of ingress/egress.

Standards and Specifications

- Sweep in a pattern that keeps spilled materials from being pushed toward catch basin inlets.
- Locate storage and disposal sites for the material collected during sweeping so it will not get back to storm sewer systems.
- Before sweeping, manually rake sand from any adjacent turf areas onto the surface to be swept.
- Use a small pool of highly trained operators.
- At minimum, pavement should be swept twice yearly: in early spring, to collect sand, salt and winter debris, and in fall, to capture leaves and other debris.
- Sweep after activities or in locations that generate debris, such as at construction entry points.

Concrete Washout

WM-01



CW

Definition and Purpose

These are procedures and practices that are designed to minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

Appropriate Applications

- Concrete waste management procedures and practices are implemented on construction projects where concrete is used as construction material or where concrete dust and debris result from demolition activities.
- Where slurries containing Portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition.
- Where concrete trucks and other concrete-coating equipment are washed on site, when approved by the Resident Engineer (RE).

Limitations

None identified.

Standards and Specifications

- Prefabricated washout containers.
  - The prefabricated containers resist damage and protect well against spills and leaks, and the full-service option relieves the site superintendent of the burden of disposing of materials.
  - To prevent leaks on the jobsite, ensure that prefabricated washout containers are watertight.
- Self-installed concrete washouts.

- Self-installed structures are much less reliable than prefabricated containers and are prone to leaks.
- There are many design options for the washout, but they are preferably built below-grade to prevent breaches and reduce the likelihood of runoff. Above-grade structures can also be used if they are sized and constructed correctly and are diligently maintained.
- One of the most common problems with self-installed concrete washout facilities is that they can leak or be breached as a result of constant use, so you should take care to use quality materials and inspect the facilities on a daily basis.

- You should size your washouts to handle solids, wash water, and rainfall to prevent overflow.
- 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump truck.
- For larger sites, a below-grade washout should be at least 10 feet wide and sized to contain all liquid and solid waste you expect to generate in between cleanout periods.
- Washouts at smaller sites, such as a single-family residential lot, should be sized to accommodate the expected load and can be smaller than 10 feet wide. Include a minimum 12-inch freeboard in the sizing calculations.
- At larger sites, build an above-grade washout at least 10 feet wide by 10 feet long and size it to contain all liquid and solid waste you expect to generate in between cleanout periods.
- Washouts at smaller sites can be smaller according to the expected capacity needed. Include a 4-inch freeboard in the sizing calculations.

Maintenance and Inspection

- Check all concrete washout facilities daily to determine if they have been filled to 75 percent capacity, which is when materials need to be removed.
- Both above- and below- ground self-installed washouts should be inspected daily to ensure that plastic linings are intact and sidewalls have not been damaged by construction activities.
- Prefabricated washout containers should be inspected daily as well to ensure the container is not leaking or nearing 75 percent capacity.

Definition and Purpose

Solid waste management procedures and practices are designed to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, or removal of construction site wastes.

Appropriate Applications

Solid waste management procedures and practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

- Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam and other materials used to transport and package construction materials.

- Highway planting wastes, including vegetative materials, plant containers, and packaging materials.

- Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

Limitations

- Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Standards and Specifications

Collection, Storage, and Disposal

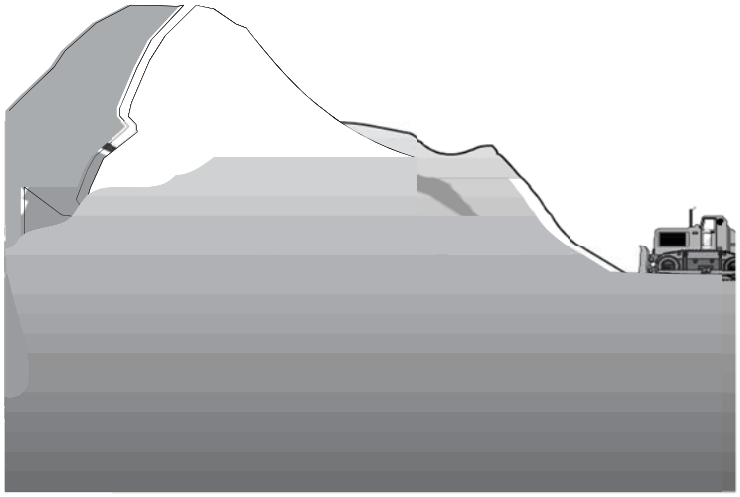
- Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project and properly serviced.

- Littering on the project site shall be prohibited.
- To prevent clogging of the storm drainage system litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.
- Trash receptacles shall be provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Construction debris and litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly regardless of whether the litter has generated by the Contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.
- Full dumpsters shall be removed from the project site and the contents shall be disposed of outside the highway right-of-way.
- Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.
- Construction debris and waste shall be removed from the site every two weeks or as directed by the RE.
- Construction material visible to the public shall be stored or stacked in an orderly manner to the satisfaction of the RE.
- Storm water run-on shall be prevented from contracting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Dumpster washout on the project site is not allowed.
- Notify trash hauling contractors that only watertight dumpster's area acceptable for use on-site.
- Plan for additional containers during the demolition phase of construction.
- Construction waste shall be stored in a designated area approved by the RE.

- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Keep the site clean of litter debris.
- Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

Maintenance and Inspection

- Police site for litter and debris.
- The WPCM shall monitor onsite solid waste storage and disposal procedures.



Definition and Purpose

These are procedures and practices to minimize or eliminate the discharges of pollutants to the drainage system or to watercourses from contaminated soil.

Appropriate Applications

- Contaminated soil management is implemented on construction projects in highly urbanized or industrial areas where soil contamination may have occurred due to spills, illicit discharges, and leaks from underground storage tanks.
- It may also apply to highway widening projects in older areas where median and shoulder soils may have been contaminated by aerially deposited lead (ADL).

Limitations

- The procedures and practices presented in this best management practice (BMP) are general. The contractor shall identify appropriate practices and procedures for the specific contaminants known to exist or discovered on site.

Standards and Specifications

Contaminated soils are often identified during project planning and development with known locations identified in the plans and specifications. The contractor shall review applicable reports and investigate appropriate call-outs in the plans and specifications.

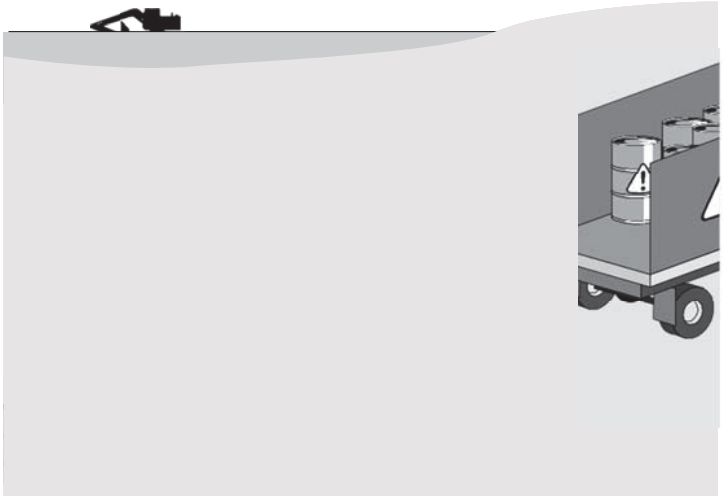
- Contractor may further identify contaminated soils by investigating:
  - Past site uses and activities.
  - Detected or undetected spills and leaks.
  - Acid or alkaline solutions from exposed soil or rock formations high in acid or alkaline forming elements.

- Look for contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris. Test suspected soils as at a certified laboratory.

Maintenance and Inspection

- The Contractor's Water Pollution Control Manager, foreman, and/or construction supervisor shall monitor on-site contaminated soil storage and disposal procedures.
- Monitor air quality continuously during excavation operations at all locations containing hazardous material.
- Coordinate contaminated soils and hazardous substances/waste management with the appropriate federal, state, and local agencies.
- Inspect hazardous waste receptacles and areas regularly.

Hazardous Waste Management



Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain system or to watercourses.

Appropriate Applications

- This best management practice (BMP) applies to all construction projects.

  - Petroleum Products,
  - Asphalt Products,
  - Concrete Curing Compounds,
  - Pesticides,
  - Acids,
  - Paints,
  - Stains,
  - Solvents,
  - Wood Preservatives, and
  - Roofing Tar

Limitations

- Nothing in this BMP relieves the Contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous waste.

Standards and Specifications

- Drums shall not be overfilled and wastes shall not be mixed.
- Unless watertight, containers of dry waste shall be stored on pallets.
- Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourse or drainage systems. Waste paints, thinners, solvents, residues, and sludge that cannot be recycled or

reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.

- Ensure that adequate hazardous waste storage volume is available.
- Ensure that hazardous waste collection containers are conveniently located.
- Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
- Minimize production or generation of hazardous materials and hazardous waste on the job site.
- Use containment berms in fueling and maintenance areas and where the potential for spills is high.
- Segregate potentially hazardous waste from non-hazardous construction site debris.
- Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.
- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground
- Do not mix wastes.

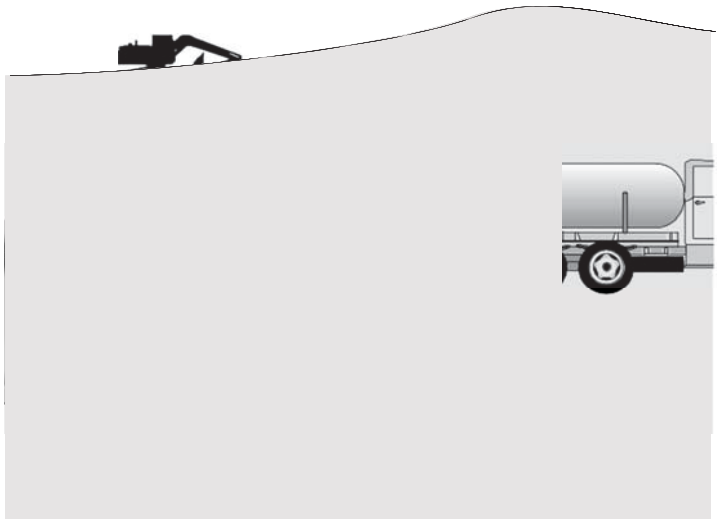
Maintenance and Inspection

- A foreman and/or construction supervisor shall monitor on-site hazardous waste storage and disposal procedures.
- Waste storage areas shall be kept clean, well-organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Storage areas shall be inspected in conformance with the provisions in the contract documents.
- Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.

- Hazardous spills shall be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.

Sanitary Waste Management

WM-05



Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses.

Appropriate Applications

Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems.

Limitations

- An effective waste management system requires training and signage to promote awareness of the hazards of improper storage, handling, and disposal of wastes.
- The only way to be sure that waste management practices are being followed is to be aware of worker habits and inspect storage areas regularly.
- Extra management time may be required to ensure that all workers are following the proper procedures.

Standards and Specifications

- Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk. Temporary facilities shall also be anchored or staked down to prevent spills or injury.
- Wastewater shall not be discharged or buried within the highway right-of-way.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, shall comply with the local health agency,

city, county, and sewer district requirements.

- If using an onsite disposal system, such as a septic system, comply with local health agency requirements.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharge.
- Ensure the sanitary/septic facilities are maintained in good working order by a licensed service.
- Use only reputable, licensed sanitary/septic waste haulers.

Maintenance and Inspection

- Inspect storage and use areas and identify containers that could malfunction and cause leaks or spills.
- Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness.
- Immediately repair or replace any equipment that is found to be defective.

BMP Objectives

- Flow Attenuation
- Runoff Volume Reduction
- Soil Erosion
- Sediment Control
- Nutrient Loading
- Minimize or eliminate storm water pollutants

- Primary design benefit
- Secondary design benefit
- Little or no design benefit

Definition and Purpose

Seeding effectively minimizes the area of a construction-site prone to erosion and should be used everywhere the sequence of construction operations allows vegetation to be established.

Appropriate Applications

- Selection of species for a specific site should be based on soils, moisture conditions, light levels, whether or not concentrated flows will occur, land use, and level of maintenance.
- Seeding has advantages including lower establishment costs, wide selection of seed mixes (both native and nonnative) and is easier to install on different sites.
- The use of seeding mixtures that includes native grass species should be considered for improving wildlife habitat, aesthetics and be approved by the RE.

Limitations

- Cannot be implemented during off-season. When construction continues into the fall season, a heavy mulch application is preferable to vegetative stabilization.

Standards and Specifications

- Seed should be applied uniformly with a cyclone seeder, drill or cultipacker seeder, or hydro-seeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydro-seeding is used,

the seed and mulch must be applied in separate applications.

- In hydro-seeding, often used on larger areas, seeds are mixed with water and fertilizer where necessary, and fiber mulch is sprayed onto the soil in a second separate layer.

- Temporary seeding should be applied on exposed soil where additional work (grading, etc.) is not scheduled for more than 45 days. Temporary seeding of annual grasses may be used for up to 12 months to temporarily stabilize exposed areas. Soil amendments may be needed to establish vegetation on some construction areas.

- Permanent seeding should be applied if the areas will be idle for more than a year.

- Structural erosion and sediment control practices such as diversions and sediment traps shall be installed and stabilized with temporary seeding prior to grading the rest of the construction site.

- Idle areas should be seeded as soon as possible after grading or shall be seeded within 7 days. Several applications of temporary seedling are necessary on typical construction projects.

- The seedbed should be pulverized and loosened to ensure the success of establishing vegetation. However, temporary seeding should not be postponed if ideal seedbed preparation is not possible. Disturbed sites require seedbed preparation to loosen the soil surface for water infiltration and root penetration.

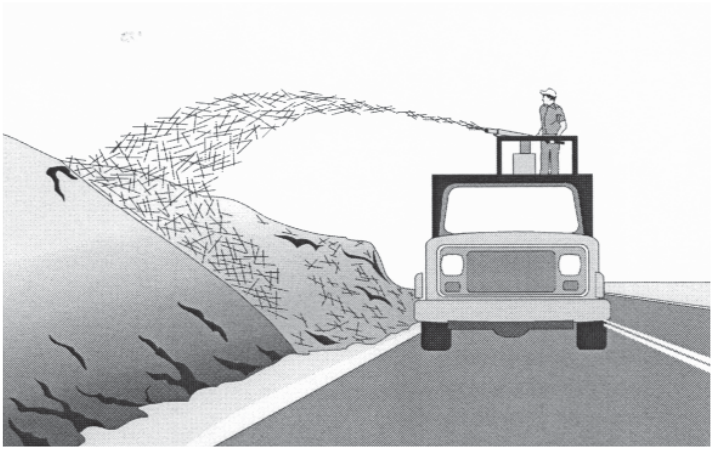
- Establishing nonnative planting sometimes requires a fertilizer application to initiate growth. Apply these nutrients according to soil test recommendations.

Maintenance and Inspection

- Seeded areas must be kept consistently moist for the first three weeks after planting. Mulch aids in retaining soil moisture.

- Areas seeded in nonnative grasses should be mowed once or twice a year to prevent establishment of woody plants.

- Native grass seedlings should be mowed two or three times the first year at a height of six inches to reduce competition from annual weeds. They should be mowed once a second year, and burned or mowed every other year thereafter.



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◐ Minimize or eliminate storm water pollutants

- ◐ Primary Design Benefit
- ● Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed

properly to be effective.

- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

- Organic mulches, such as straw and wood fiber, have been found to be very effective in preventing soil erosion.
- Wood fiber mulch should consist of raw hard or soft timber that has been run through a mechanical chipper hammer mill or tub grinder. Wood should be free of mold, dirt, sawdust and foreign material.
- Do not use material that may contain competing weed and grass seeds. Decomposition of some wood products can tie up significant amounts of soil nitrogen; make it necessary to modify fertilization rates to add fertilizer with the mulch.
- Straw mulch may be disc-anchored into the soil, hydraulically bonded, or covered with netting and stapled. The choice of materials and anchoring of mulches should be based on slope steepness and length, soil conditions, season, type of vegetation, and size of area.
- Straw mulch is most commonly used in conjunction with seeding.
- The following methods of anchoring mulch may be used:
    - A mulch-anchoring tool: is a tractor-drawn implement designed to punch mulch into the soil. A mulch-anchoring tool provides maximum erosion control with straw.
    - A regular farm disc, weighted and set nearly straight, may be used instead, but it will not do a job comparable to the mulch-anchoring tool.
    - The disk should not be sharp enough to cut through the straw. These methods are limited to slopes no steeper than 3:1, where equipment can operate safely.

Maintenance and Inspection

- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.
- Continue inspections until vegetation is established.
- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

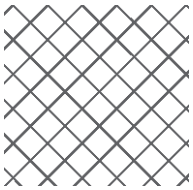
Mulch Tackifier

EC-03

BMP Objectives

- ○ Flow attenuation
- ◑ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

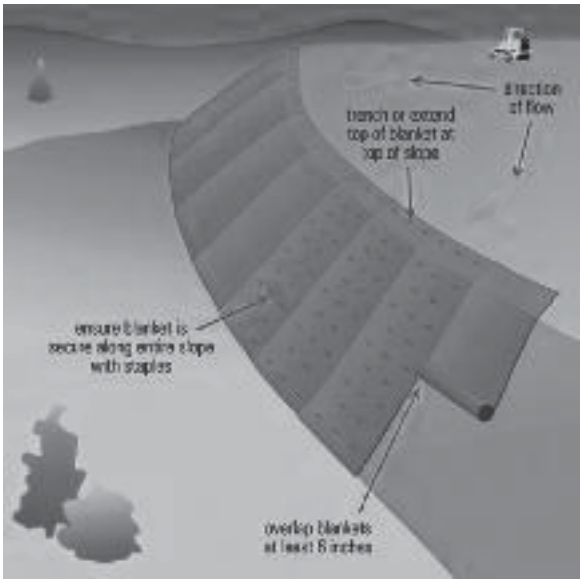
- Hydraulic mulches vary in type, composition and additives, and range from light- to heavy-duty.
- Form a mat-like barrier that controls water- and wind-induced erosion.
- Although an infinite number of application rates could be used, one or two rates are generally specified.
  - One rate is the blanket equivalent rate required for erosion control, usually between 3,000 and 4,000 pounds per acre, depending on manufacture recommendation for percent slope and length.
  - The other rate, generally half the erosion blanket control rate, is especially useful for enhancing seed germination and soil stabilization of 6:1 or flatter slopes.
- These types of fiber mulch are typically used as hydro-mulch:
  - *Bonded Fiber Matrix* refers to a continuous layer or elongated wood fiber strands that are held together by water-resistant bonding agent to form a water absorbing crust.
  - *Wood Fiber Mulch* when sprayed on the soil, the virgin wood fibers and tackifier that comprise this biodegradable mulch form a blotter-like cover that readily absorbs water and allows infiltration to the underlying soil.
  - *Blended Mulch* consists of specially prepared, biodegradable, shredded paper particles, wood fibers and tackifier.
- Tackifiers are necessary to hold fibers together and to keep them from washing or blowing away. Primary tackifier types include:
  - *Latex Base* the composition, by weight, of the latex emulsion polymer should be 48 percent styrene, 50 percent butadiene, and 2 percent additive.
  - *Guar Gum* tackifiers should consist of a minimum of 95 percent guar gum by weight; the remainder should consist of dispersing and cross-linking additives.
  - *Other Tackifiers* include, but are not limited to: water-soluble natural vegetable gums blended with gelling and hardening agents, or a water-soluble blend of hydrophilic polymers, viscosifiers, sticking aids, and other gums.

Maintenance and Inspection

- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.
- Continue inspections until vegetation is established.
- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

Erosion Control Blankets

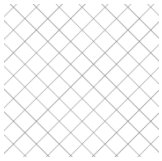
EC-04



BMP Objectives

- ◑ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.

- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

- Erosion-control blankets are biodegradable, open-weave blankets used for establishing and reinforcing vegetation on slopes, ditch bottoms, and shorelines. Several categories are provided with different service application and specific uses as shown below.

- Category 1 – Very temporary
  - Used in flat areas, shoulder drain outlets, roadway shoulder, lawns, and mowed areas.
  - Acceptable types include straw, wood fiber, and rapidly degradable netting on one side.

- Category 2 – One season
  - Use on slopes 1:3 and steeper less than 50 ft. long, ditches with gradients 2% or less, and/or flow velocities less than 6.5fps.
  - Acceptable types include straw, wood fiber and/or netting on one side.

- Category 3 – One season
  - Use on slopes with 1 verticle:3 horizontal and steeper, more than 50 ft. long, ditches with gradients 3% or less, and/or flow velocities less than 6.5 fps.
  - Acceptable types include straw, wood fibers, and/or netting on two sides.

- Category 4 – Semi-permanent
  - Use in ditches with gradients 4% or less, flow velocities less than 8.0 fps, and/or flow depth 6 inches or less.
  - Acceptable types include straw/coconut, wood fiber, and/or netting on two sides.

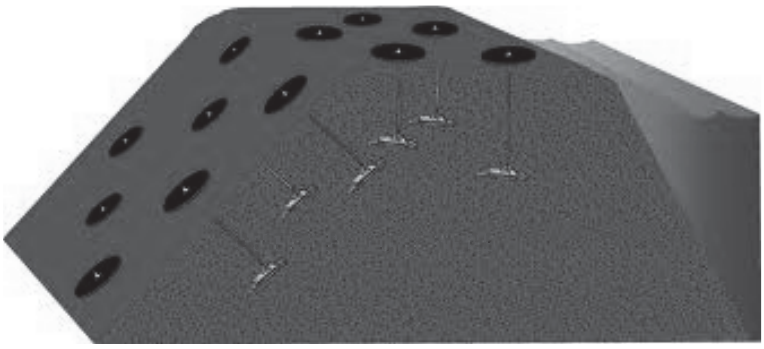
- Category 5 – Semi-permanent
  - Use in ditches with gradients 8% or less, flow velocities less than 15.0 fps and flow depth less than 8 inches, and/or watercourse banks within the normal flow elevation.
  - Acceptable types include coconut fiber, and/or netting on two sides.

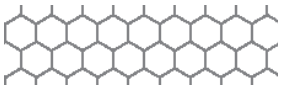
Maintenance and Inspection

- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.
- Continue inspections until vegetation is established.
- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

Turf Reinforcement Mats

EC-05





BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

This practice involves the application of organic materials to form a temporary, protective soil cover.

Appropriate Applications

- Effective for controlling erosions and stabilizing soil during and after land alteration activities.
- Foster the growth of vegetation, reduce evaporation, insulate the soil, and suppress weed growth.
- Protect the soil surface from the forces of raindrop impact and overland flow.
- Reduce flow velocities.
- Reduce soil moisture loss.
- Prevent crusting and sealing of the soil surfaces.
- Moderate soil temperatures.
- Provide a suitable microclimate for seed germination.
- May increase infiltration.

Limitations

- Mulch, erosion control blankets, TRMs must be selected and installed properly to be effective.
- Mulching may not be effective on slopes greater than 3:1.

Standards and Specifications

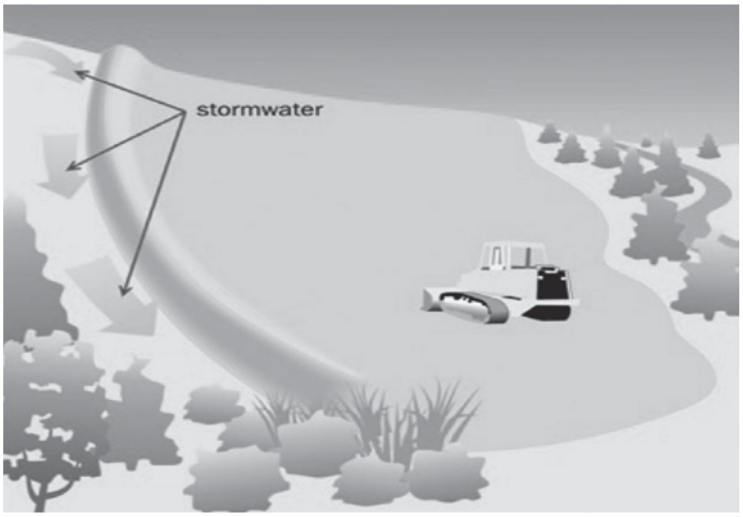
- Turf-reinforcement mats (TRMs) are synthetic, non-degradable mats that are usually buried to add stability to soils. They come in a wide range of designs and have been proven to be valuable on slopes and in channel-lining applications.
- TRMs are designed to be permanent and often are filled with soil and vegetated with installed.
- Turf-reinforcement matting consisting of non-degradable, three-dimensional matrix materials should be used with expected velocities of 15 fps and shear stress of 8lbs/ft 2. Beyond these velocities the shears, vegetated structures such as articulated clock, cable concrete and crib walls, should be considered.
- A TRM may have a biodegradable component intermixed with the synthetic portion to aid plant establishment.

Maintenance and Inspection

- Inspect all mulches and erosion control fabrics periodically, and after rainstorms to check for rill erosion, dislocation or failure. Where erosion is observed, apply additional mulch or repair fabric.
- Continue inspections until vegetation is established.
- If washout occurs, repair the slope grade, reseed and reinstall mulch. Continue inspections until vegetation is firmly established.

Diversion Berms & Ditches

EC-06



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Eliminate or minimize storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A temporary berm or ridge made of soil (or course aggregate), with or without a diversion channel.

Appropriate Applications

- Used to intercept and divert runoff to desired location such as towards a sediment trap or a slope drain.
- Used to divert runoff from areas where it might damage property, cause erosion, or interfere with the establishment of vegetation.
- Used along the top edges of cuts and fills to protect the embankment.
- Used as a temporary feature.

Limitations

- Berms to intercept and divert runoff should not be used where the drainage area exceeds 10 acres.
- Should not be used in areas with slopes steeper than 10 percent.

Standards and Specifications

- Location should be determined by considering outlet conditions, topography, land use, soil type, length of slope, and areas where seepage might be a problem.
- Berms shall have a minimum height of 18 inches, side slope of 2:1 or

flatter, and minimum base width of 4.5 feet

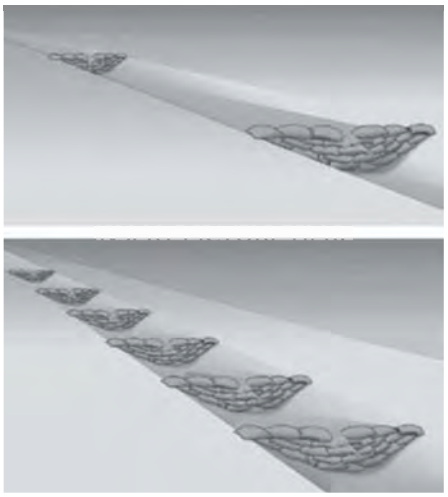
- All berms shall have an uninterrupted positive grade to stabilized outlet. The outlet should be capable of conveying concentrated runoff into an undisturbed, stabilized area at a non-erosive velocity.
- Berms shall be compacted as needed to prevent unequal settlement.
- Diversion channels shall be excavated or shaped to line, grade, and cross-section as indicated in the plans and as required to meet the criteria as specified.
- All trees, brush, stumps, obstruction, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the diversion.
- Berms and diversion channels should be stabilized with riprap, fabric turf reinforcement or appropriate measure for protection against erosion and failure.

Maintenance and Inspection

- Inspection and maintenance must be provided periodically and after each rain or snowfall event that causes runoff.
- Sediment accumulated against the berm should be removed periodically and properly disposed of.
- Erosion along the berm should be repaired with the stabilization measure re-established.

Check Dam

EC-07



BMP Objectives

- ◑ Flow Attenuation
- ◑ Runoff Volume Reduction
- ● Soil Erosion
- ● Sediment Control
- ◑ Nutrient Loading
- ○ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Check dams can either be permanent or temporary barriers that prevent erosion and promote sedimentation by slowing flow velocities and/or to filtering concentrated flows.

Appropriate Applications

- Concentrated-flow areas such as:
  - Vegetated ditches; and
  - Swells.
- Nearly all instances, erosion control blankets should be used in conjunction with check dam.

Limitations

- Requires periodic repair and sediment removal upstream of check dams.
- Removal of temporary check dams can be difficult.

Standards and Specifications

- Check dams provide relatively good removal of coarse and medium-size sediment from runoff.
- Rock check dams should consist of well-graded stone consisting of a mixture of rock sizes. For example: Class IV riprap with the percent less than the specified rock diameter.

- 100% < 24 inches
- 75% < 15 inches
- 50% < 9 inches
- 10% < 4 inches

- A triangular silt dike is a triangular-shaped foam block covered with geotextile fabric. When laid in the channel, it will form a check dam. Triangular silt dikes are light weight and easy to install and maintain

- To increase the effectiveness of rock check dams, a shallow pool upstream of the check is recommended. The pool allows additional sediment storage.

- Silt fence check dams can also be used if fence is the sliced in type with monofilament fabric.

- Other types of silt fence (such as preassembled) should not be used.

Maintenance and Inspection

- Inspect check dams and drainage ways for damage after each runoff event.

- Anticipate submergence and deposition above the check dam and erosion from high flows around the edges of the dam.

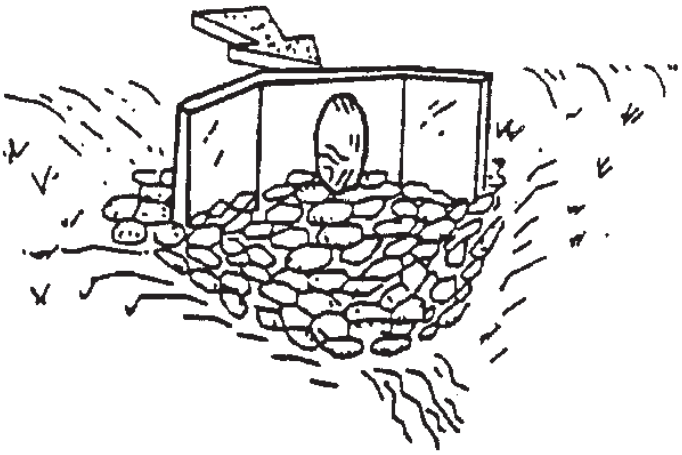
- Correct all damage immediately. If significant erosion occurs between dams, additional protection may be required. This may include a protective riprap liner in that portion of the channel or placing additional check dams.

- Remove sediment accumulated behind the dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam, and prevent large flows from carrying sediment over the dam.

- Add rock or remove and replace rock to dams as needed to maintain design height, cross section, and flow through characteristics.

Outlet Protection

EC-08



BMP Objectives

- ◑ Flow Attenuation
- ○ Runoff Volume Reduction
- ● Soil Erosion
- ○ Sediment Control
- ◑ Nutrient Loading
- ○ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

These devices are placed at pipe outlets to prevent scour and reduce the velocity and/or energy of storm water flows.

Appropriate Applications

- These devices may be used at the following locations:
  - Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels.
  - Outlets located at the bottom of mild to steep slopes.
  - Outlets subject to short, intense flows of water, such as flash floods.
  - Points where lined conveyances discharges to unlined conveyances.
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Loose rock may have stones washed away during high flows.
- Grouted riprap may break up in areas of freeze and thaw.
- If there is not adequate drainage, and water builds up behind grouted

riprap, it may cause the grouted riprap to break up due to the resulting hydrostatic pressure.

Standards and Specifications

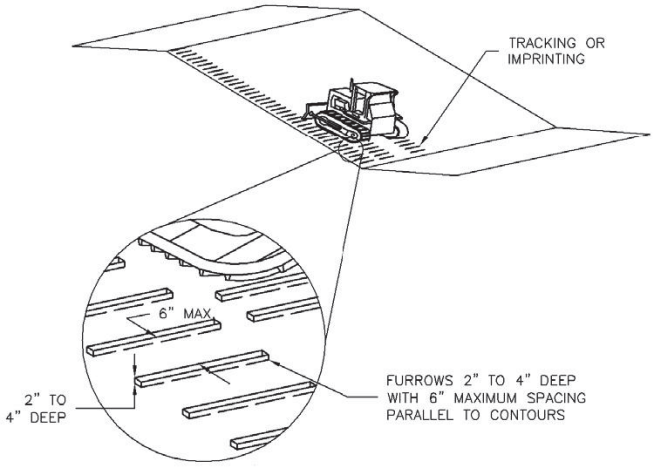
- There are many types of energy dissipaters. Please note that this is only one example and the RE may approve other types of devices proposed by the contractor.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction.
- Carefully place riprap to avoid damaging the filter fabric.
- For proper operation of apron:
  - Alight apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in upper section of apron.
  - If size of apron riprap is large, protect underlying filter fabric with a gravel blanket.
- Outlets on slopes steeper than 10% shall have additional protection.

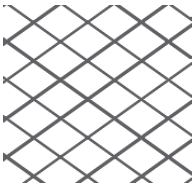
Maintenance and Inspection

- Inspect temporary measures prior to the rainy season, after rainfall events, and regularly (approximately once per week) during the rainy season.
- Inspect apron for displacement of the riprap and/or damage to the underlying fabric. Repair fabric and replace riprap that has washed away.
- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.
- Temporary devices shall be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Grading Techniques

EC-09





BMP Objectives

- ◑ Flow Attenuation
- ◑ Runoff Volume Reduction
- ● Soil Erosion
- ● Sediment Control
- ◑ Nutrient Loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Land grading is reshaping the ground surface to planned grades as determined by engineering survey evaluation and layout.

Appropriate Applications

- The grading plan establishes drainage areas, directs drainage patterns and affects runoff velocities.
- The grading plan forms the basis of the erosion-and-sedimentation-control plan.
- Land grading and lot benching is to reduce the slope and length of slope of disturbed areas within a subdivision development, thereby reducing the erosion potential and establish drainage patterns on individual lots within a subdivision at the time of rough grading.

Limitations

- High cost, if extensive amounts of grading are required to properly grade site.

Standards and Specifications

- The lots should be graded so that runoff flows towards the cut slope of the lot located on the uphill side of the lot. This prevents runoff from being directed over a steep slope to a lower lot.
- Runoff from each lot should be directed to the street, a road ditch or

another stable outlet rather than onto an adjacent lot.

- The final grade of the building site should be as flat as possible.

- Key considerations that affect erosion and sedimentation include:
  - Deciding which slopes are to be graded.
  - When the grading work will start and stop.
  - The degree and length of finished slope.
  - Where and how excess material will be disposed of, and where borrow is needed.
  - Refer to Scheduling Best Management Practice for the proper phasing of grading operations.

- Consider how to take advantage of undisturbed water-disposal outlets before storm drains or other constructed outlets are installed.

- Before grading begins, decisions must be made on the gradient of cut-and-fill slopes, how they will be protected from runoff, how they will be stabilized and how they will be maintained.

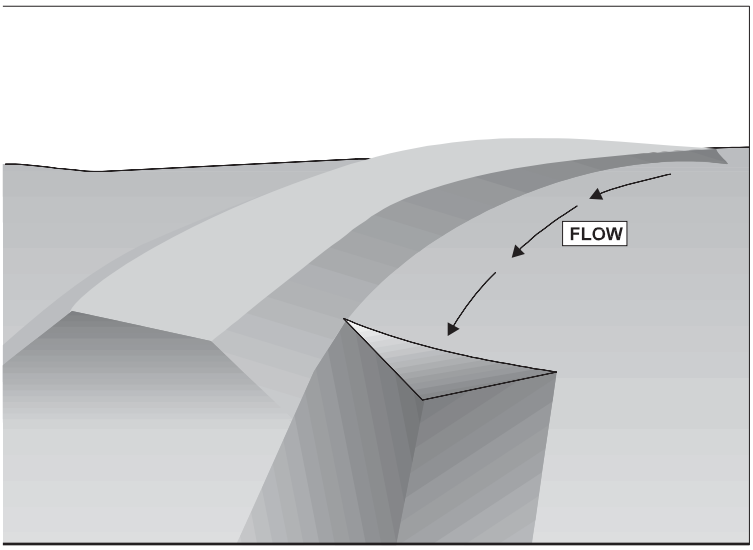
Maintenance and Inspection

- Periodically check all graded areas and the supporting erosion control practices, especially after heavy rainfalls (or as required by the NPDES permit).

- Promptly remove all sediment from diversions and other water-disposal practices. If washouts or breaks occur, repair them immediately.

- Prompt maintenance of small, eroded areas before they become significant gullies is an essential part of an effective erosion-and-sedimentation-control plan.

- If an extended period of time passes before homes are built, maintenance of the vegetation may be required. Maintenance may include mowing or spraying to control noxious weeds.



BMP Objectives

- ● Flow attenuation
- ◑ Runoff volume reduction
- ○ Soil erosion
- ◑ Sediment control
- ◑ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

The dry swales (also called a grassed swale) is a type of open vegetated channel used to treat and attenuate the water quality volume of storm water runoff as well as convey excess storm water downstream. The dry swale is related to the wet swale, though the latter does not have an underlying filtering bed.

Appropriate Applications

- Good option for residential settings, as they discourage long-standing water.
- The entire water quality of volume of a given storm is temporarily held in a pool or series of pools created by permanent check dams or ditch blocks.
- May be treated as an extension to a mown lawn or be planted in native grasses and allowed to grow longer.
- An under drain system is also installed under the soil bed. Typically this under drain system is created by a gravel layer which encases a perforated pipe.

Limitations

- If designed or installed improperly (e.g., if proper slopes or sufficiently dense vegetation are not achieved) dry swales will not effectively

remove sediment and pollutants.

- Individual dry swales can treat only a small area.
- May not be applicable to sites with many driveway culverts or extensive sidewalk systems.
- Do not appear to be effective in reducing bacteria levels in storm water, and appear to remove only modest amounts of phosphorus. Few studies are available to gauge their effectiveness.
- Require more maintenance than curb and gutter systems.
- Roadside dry swales are subject to damage from off-street parking and snow removal.

Standards and Specifications

- Siting
  - Individual dry swales should be designed to treat relatively small, flat drainage areas. If the swales employ slopes steeper than four percent or if they are used to treat areas larger than five acres, the flow velocity becomes too great for effective treatment and erosion of the channel is more likely.
  - Dry swales can be sited on most soils. Native soils with low permeability, however, will need to be amended or replaced to increase infiltration.
  - The bottom of the swale should be at least three feet above groundwater in order to prevent the swale bottom from remaining moist or groundwater from being contaminated.
  - If used in areas with steep slopes, dry swales must generally run parallel to contours in order to be effective.
- Channel Profile and Size
  - The swale should have a trapezoidal or parabolic cross section with relatively flat side slopes (less than 3:1 horizontal:vertical). This maximizes the wetted perimeter – the length along the edge of the channel cross-section that is in contact with the runoff – and thus enhances treatment.
  - Shallow side slopes also allow any runoff entering the swale from

the side to receive some treatment. A filter strip or other vegetated buffer should be located on both sides of the swales, particularly if nearby impervious surfaces drain into the swale.

- The flat channel bottom should be located on both sides of the swale, particularly if nearby impervious surfaces drain into the swale.

Maintenance and Inspection

- Dray swales must be maintained in order to function properly. Plans should include a detailed inspection and maintenance plan, identify owners and indicate those responsible for maintenance.

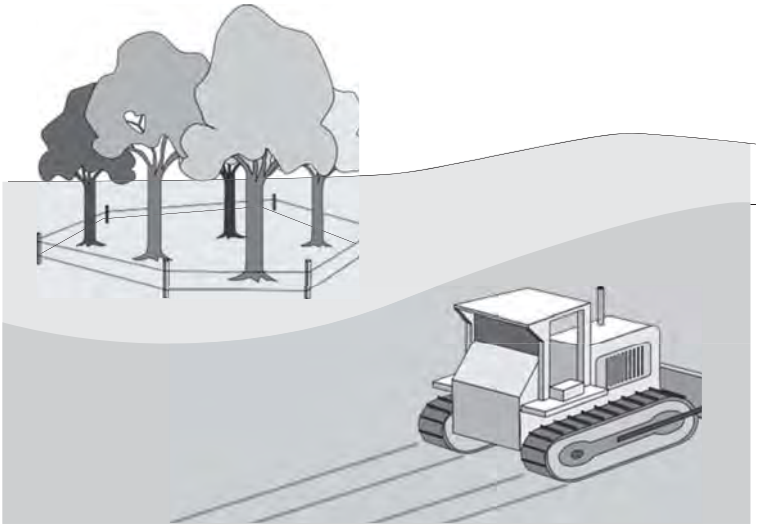
- Annually or Semiannually
  - Inspect swale several times the first few months to ensure grass cover is establishing well. If not, reseed or plant an alternative species. Once established, continue to inspect semiannually for erosion problems.
  - At least annually inspect pea gravel diaphragm for clogging from excess sediment; remove sediment and correct associated problems.
  - Remove trash and debris accumulated in the swale.

- As Needed (frequent)
  - Mow turf grass to a height of about four inches. If native grasses are used, mow only once a year in early spring to remove dead vegetation. Mowing the native grasses the first year is critical in order to eliminate competition from annual weeds.
  - With infrequent mowings, remove the clippings.

- As Needed (infrequent)
  - Remove sediment buildup on the bottom of swale once it has accumulated to 25 percent of the original design volume.
  - Reseed as necessary to maintain dense vegetation.
  - Grass in the swales should be fertilized rarely, if at all, to avoid unnecessary export of nutrients. If application of lime or fertilizer is deemed necessary on the basis of soil tests, it should be done only in cool spring or fall weather and only with a no phosphorus fertilizer.

Preserve Existing Vegetation

EC-11



BMP Objectives

- Flow Attenuation
- Runoff Volume Reduction
- Soil Erosion
- Sediment Control
- Nutrient Loading
- Minimize or eliminate storm water pollutants

- Primary design benefit
- Secondary design benefit
- Little or no design benefit

Definition and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Appropriate Applications

- Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

  - Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multiyear project where grading can be phased.

  - Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.

  - Areas where local, state, and federal government require preservation such as vernal pools, wetlands, marshes, certain oak trees, etc. these areas are usually designated on the plans, or in the specifications, permits, or environmental documents.

  - Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Limitations

- Requires forward planning by the owner/developer, contractor, and design staff
- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Standards and Specifications

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.
- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Maintenance and Inspection

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage or protected trees still occurs, maintenance guidelines described below should be followed:

- Verify the protective measures remain in place. Restore damaged protection measures immediately.

- Serious tree injuries shall be attended to by an arborist.

- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.

- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy.

- Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.

- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.

- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.

- If bark damage occurs, cut back on loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged areas as much as possible.

- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.

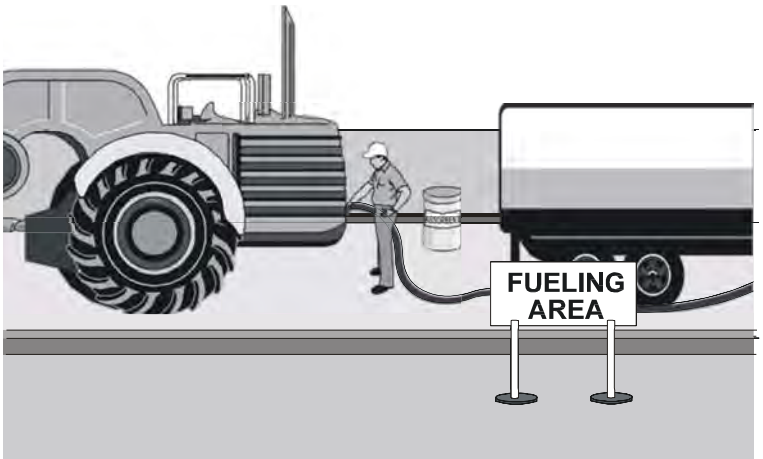
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery. Fertilize trees in the late fall or early spring.

  - Apply fertilizer to the soil over the feeder roots and in accordance with label instruction, but never closer than 3ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

Equipment Fueling

GN-01



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ○ Soil erosion
- ◑ Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Vehicle and equipment fueling procedures and practices are designed to minimize or eliminate the discharge of fuel spills and leaks into storm drain systems or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

Limitations

- Onsite vehicle and equipment fueling shall only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

- When fueling must occur onsite, the contractor shall select and designate an area to be used, subject to approval of the Resident Engineer (RE).
- Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.

- Dedicated fueling areas shall be protected from storm water run-on and runoff, and shall be located at lease 15m (50 ft.) from downstream drainage facilities and water courses. Fueling must be performed on level-grade areas.

- Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips. Fueling operations shall not be left unattended.

- Protect fueling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.

- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts. Ensure the nozzle is secured upright when not in use.

- Fuel tanks shall not be “topped-off.”

- Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.

- Absorbent spill clean-up materials shall be available in fueling and maintenance areas and used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be removed promptly and disposed of properly.

- Federal, state, and local requirements shall be observed for any stationary ground storage tanks.

- Mobile fueling of construction equipment throughout the site shall be minimized. Whenever practical, equipment shall be transported to the designated fueling area.

Maintenance and Inspection

- Fueling areas and storage tanks shall be inspected regularly.

- Keep an ample supply of spill cleanup material on the site.

- Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.

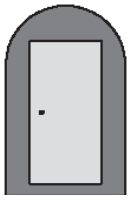
Temporary Restroom

GN-02

BMP Objectives

- ○ Flow Attenuation
- ○ Runoff Volume Reduction
- ○ Soil Erosion
- ○ Sediment Control
- ◑ Nutrient Loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to storm water from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Appropriate Applications

- All sites with no permanent sanitary facilities or where permanent facility is too far from activities.
- Locate portable toilets in convenient locations throughout the site.
- Prepare level, gravel surface and provide clear access to the toilet for servicing and for on-site personnel.
- Construct earth berm perimeter, control for spill/protection leak.

Limitations

No limitations

Standards and Specifications

- Portable toilets must be provided if not permanent facilities are available.
- Sanitary facilities must be provided on the site in close proximity to areas where people are working.

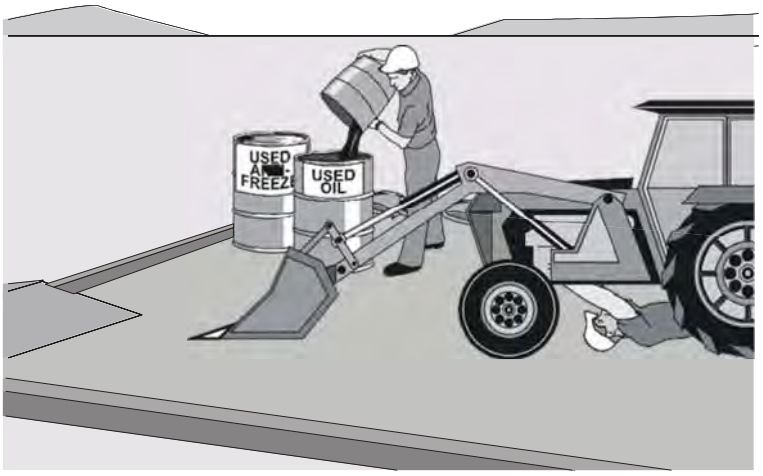
- Locate portable toilets a minimum of 20 feet away from drainage facilities, water source and from traffic circulation.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.
- Portable toilets must be secured to the ground by stakes or other suitable means to prevent them from turning over during high winds or by accident.

Maintenance and Inspection

- Portable toilets should be maintained in good working order by licensed service with daily observation for leak detection.
- Regular waste collection should be arranged with licensed service.
- All waste should be deposited in sanitary sewer system for treatment with appropriate agency approval.

Equipment Maintenance

GN-03



BMP Objectives

- ○ Flow attenuation
- ● Runoff volume reduction
- ○ Soil erosion
- ○ Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Ideally, vehicle maintenance should occur in garages, not on active construction sites. However, if these activities are required to be performed onsite, operators should follow appropriate BMPs to prevent hazardous wastes from being discharged to surface or ground waters.

Appropriate Applications

- Vehicle maintenance BMPs prevents construction site spills of fuel, or coolant from contaminating surface or ground water. They apply to all construction sites.

Limitations

- Connection cost to sanitary sewers.
- Construction costs for an enclosed maintenance area.
- Labor costs for hazardous waste storage, handling, and disposal.

Standards and Specifications

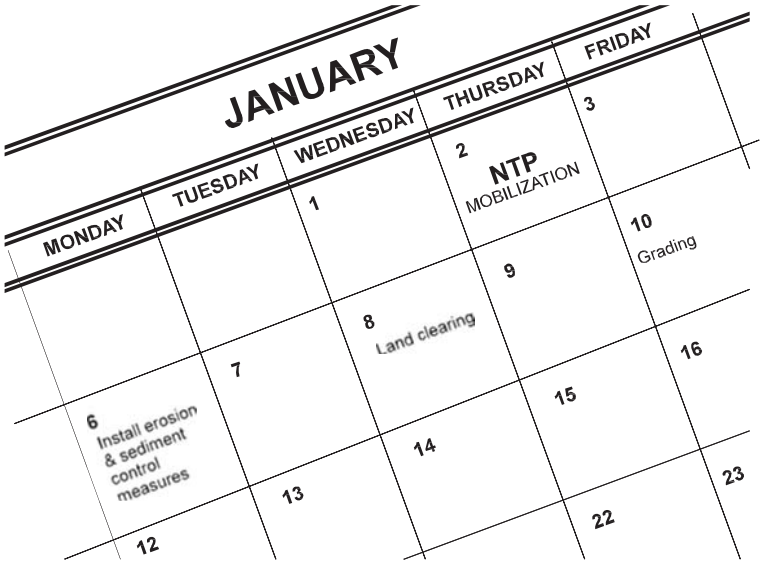
- Designate special paved and bermed or otherwise contained vehicle repair areas to prevent illicit discharges into storm water areas for vehicle repair.
- Dispose of all used oil, antifreeze, solvents, and other automotive-related chemicals according to manufacturer instructions.
- Used oil, antifreeze, and some solvents can be recycled at designated facilities, but other chemicals must be disposed of at a hazardous waste

disposal site.

- Absorbent spill clean-up materials and spill kits shall be available and shall be disposed of properly.

Maintenance and Inspection

- Vehicle maintenance operations produce substantial amounts of hazardous and other wastes that require regular disposal.
- Clean up spills and dispose of cleanup materials immediately.
- Inspect equipment and storage containers regularly to identify leaks or signs of deterioration.



BMP Objectives

- ○ Flow Attenuation
- ○ Runoff Volume Reduction
- ○ Soil Erosion
- ◑ Sediment Control
- ○ Nutrient Loading
- ○ Minimize or eliminate storm water pollutants

- ● Primary design benefit
- ◑ Secondary design benefit
- ○ Little or no design benefit

Definition and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Appropriate Applications

- Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Standards and Specifications

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.

- Plan the project and develop a schedule showing each phase of

construction. Clearly show how the rainy season relates to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-storm water BMPs
  - Waste management and materials pollution control BMPs

- Include dates for activities that may require non-storm water discharges such as dewatering, saw cutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.

- Work out the sequencing and timetable for the start and completion of each time such as site clearing and grubbing, grading, excavation, paving, foundations pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.

- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.

- Monitor the weather forecasts for rainfall.

- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.

- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.

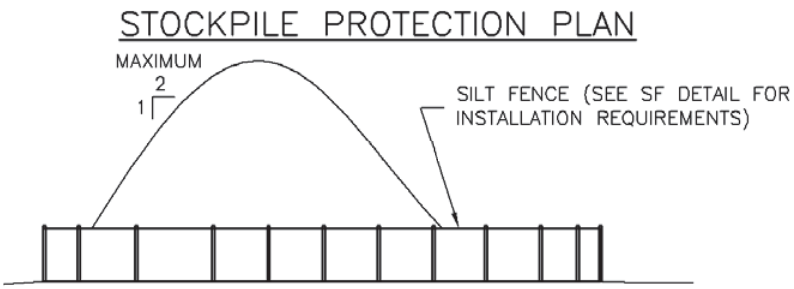
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Maintenance and Inspection

- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

Stockpile Management

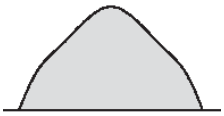
MH-01



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◐ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◐ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

Stockpile management procedures and practices are designed to reduce or eliminate air and storm water pollution from stockpiles of soil, and paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt binder (so called “cold mix” asphalt) and pressure treated wood.

Appropriate Applications

Implemented in all projects that stockpile soil and other materials.

Limitations

No limitations.

Standards and Specifications

- Protection of stockpiles is a year-round requirement.
- Locate stockpiles a minimum of 15 m (50 ft.) away from concentrated flows of storm water, drainage courses, and inlets.
- Implement wind erosion control practices as appropriate on all stockpiled material.
- Stockpiles of contaminated soil shall be managed.

- Bagged materials should be placed on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials shall be protected further as follows:

Soil stockpiles:

- During the rainy season, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.

- During the non-rainy season, soil stockpiles shall be covered and protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base:

- During the rainy season, the stockpile shall be covered or protected with a temporary perimeter sediment barrier at all times.

- During the non-rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix":

- During the rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times.

- During the non-rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable materials prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with copper, chromium and arsenic or ammonical, copper, zinc, and arsenate:

- During the rainy season, treated wood shall be covered with plastic or comparable material at all times.

- During the non-rainy season, treated wood shall be covered with plastic or comparable material and shall be placed on pallets prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials shall be protected

further as follows:

- All stockpiles shall be covered, stabilized, or protected with a temporary linear sediment barrier prior to the onset of precipitation.

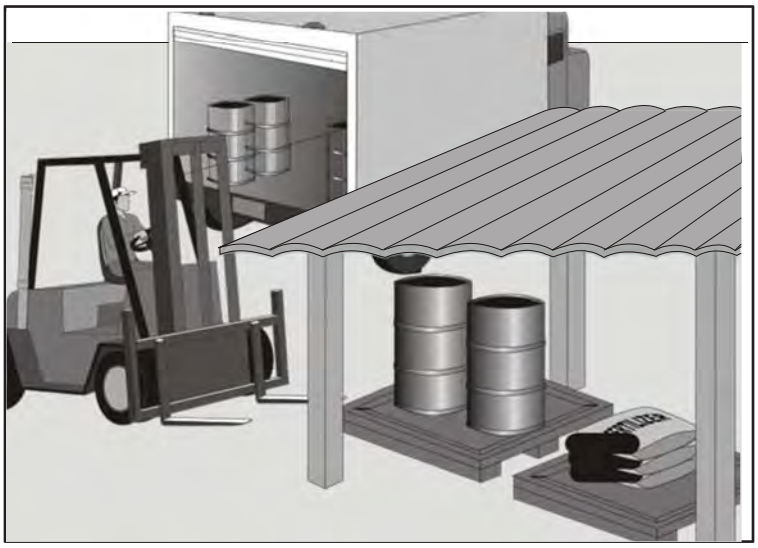
- Stockpiles of “cold mix” shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Maintenance and Inspection

- Repair and/or replace perimeter controls and covers as needed or as directed by the RE, to keep them functioning properly. Sediment shall be removed when sediment accumulation reaches one-third (1/3) of the barrier height.

Material Management

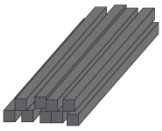
MH-02



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◐ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

These practices are to be implemented for proper handling and storage of materials in order to prevent spills or leaks into the storm drains or watercourses.

Appropriate Applications

These practices are implemented at all construction sites where delivery and storage of material may be detrimental to the environment. Materials of concern are not limited to soil, pesticides, herbicides, fertilizers, petroleum, products, asphalt and concrete components, and hazardous chemicals such as acids, paints, solvents, adhesives, and curing compounds.

Standards and Specifications

- Designated storage sheds must meet building and fire code regulations.
- Material safety data sheets (MSDS) shall be made available for all materials.
- Training for proper material handling and storage techniques shall be required.
- Provide sufficient separation between storage containers to allow cleanup and emergency response.

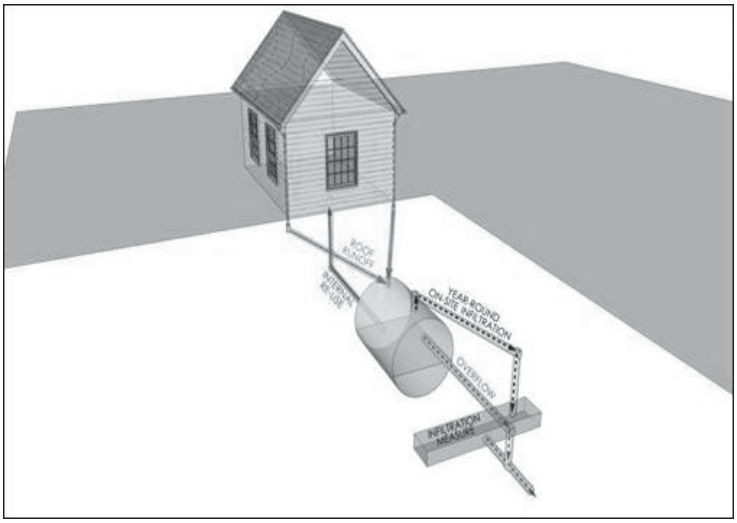
- Provide storage for materials indoor away from rainfall and offsite flows, whenever possible.
- Chemically incompatible materials should not be stored together or in the same storage facility.
- Label all materials properly and maintain current legible labels; also maintain a current inventory of all material delivered and stored.
- Hazardous materials must comply with federal, state, local, and CDOT HazMat requirements.
- Provide above ground secondary containment for all hazardous chemical materials.
- Immediately contain and cleanup any spills.

Maintenance and Inspection

- In general, areas shall be inspected on a regular basis (once per week).
- Inspect equipment and vehicles routinely for leaks.
- Maintain an ample supply of cleanup materials at all designed storage and handling areas where leaks and spills are likely to occur.
- Spot-check material storage and handling areas for compliance.
- Material storage areas shall be routinely checked for accumulation of non-labeled materials and spills.
- Identify spills or leaks into the storm drain at or near CDOT work areas and report to the CDOT illicit discharge hotline.
- Containment structures or other perimeter controls shall be inspected routinely and repaired when sign of degradation are visible.

Pre-Treatment Inlet Box

PC-01



BMP Objectives

- ◑ Flow Attenuation
- ◑ Runoff Volume Reduction
- ● Soil Erosion
- ● Sediment Control
- ◑ Nutrient Loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A structure designed to be incorporated into storm water conveyance systems for pretreatment of storm water flows. Pretreatment devices are primarily used to filter sediment and, in some cases, oil and grease from runoff before flows are discharged to receiving waters or final treatment structures. Some pretreatment devices have the capacity to remove other floatable contaminants.

Appropriate Applications

Vendor supplied (often prefabricated) and other pretreatment devices help reduce the pollutant load flowing to other treatment structures (such as detention basins or wetland) and offer removal of bulk pollutant.

Limitations

- Must be sized carefully to achieve design removal efficiencies.
- Efficiency may be affected by size of sediment and rate of sediment loading.
- Must ensure regular maintenance to achieve design removal efficiencies.
- Not appropriate for terminal treatment for runoff from LUHPPLs or discharges near or to critical areas, unless determined suitable for such use by TARP or STEP.

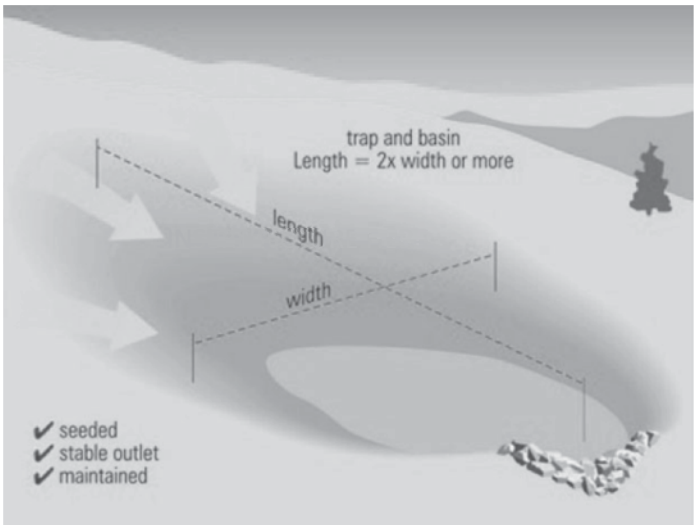
Standards and Specifications

- Independent third-party scientific verification of the ability of the proprietary system to meet water quality treatment objectives and/or to provide water quantity control (channel or flood protection).
- Proven record of longevity in the field.
- Proven ability to function in weather conditions (climate, rainfall patters, soil types, etc.).
- At least 15 storm events must be sampled.
- The study must be independent or independently verified (i.e., may not be conducted by the vendor or designer without third-party verification).
- The study must be conducted in the field, as opposed to laboratory testing.
- Field monitoring must be conducted using standard protocols which require proportional sampling both upstream and downstream of the device.
- Concentrations reported in the study must be flow-weighted.
- The propriety system or device must have been in place for at least one year at the time of monitoring.

Maintenance and Inspection

The proper operation and maintenance of a storm water management structure includes frequent inspection and scheduled maintenance activities. Man power and budget needed to perform the maintenance must be anticipated.

Detention Basin



BMP Objectives

- Flow Attenuation
- Runoff Volume Reduction
- Soil Erosion
- Sediment Control
- Nutrient Loading
- Minimize or eliminate storm water pollutants

- Primary Design Benefit
- Secondary Design Benefit
- Little or no design benefit

Definition and Purpose

Excavated basins used for the short term impoundment of storm water runoff with controlled release through an outlet structure and predevelopment flow rates.

Appropriate Applications

- Controls peak runoff for 2 and 10-year storms.

Limitations

- Not effective at removing dissolved pollutants.
- Limited ability to remove TSS with limited settling of solids.
- Potential for suspension of solids.
- Susceptible to frequent clogging.
- Limited or no recharge.

Standards and Specifications

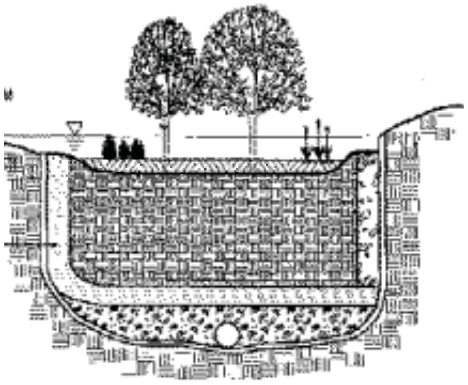
- Should be design with two stage outlet structure. One stage to regulate peak flows from large storms and another stage to detain the 2-year and 10-year storm.
- Need differential elevation between inlet and outlet.

- Outlet pipe must be protected to prevent clogging.
- Emergency spillway required to bypass runoff from large storms.
- Need inlet transition structure to prevent scour.

Maintenance and Inspection

- Inspect at least once a year.
- Remove sediment to prevent re-suspension.

Retention Basin



BMP Objectives

- ◑ Flow attenuation
- ● Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Retention Systems are presented as a general concept, rather than a specific type of BMP. The retention concept uses biological activity to filter/clean storm water.

Appropriate Applications

- When properly designed and maintained, more likely to be aesthetically pleasing than other types of filtration or infiltration systems due to incorporation of plants.
- Reduces the volume of runoff from a drainage area.
- Can be very effective for removing fine sediment, trace metals, nutrients, bacteria, and organics.
- Layout of retention facilities can be very flexible, and the selection of plant species can provide for a wide variety of landscape designs.
- Can be applied in many different climates and geologic environments, with some minor design modifications.
- Ideally suited to many highly impervious areas, such as parking lots.
- Reduces the size and cost of downstream storm water control facilities and/or storm drain systems by infiltrating storm water in upland areas.

- Reduces downstream flooding and protects stream bank integrity.
- Provides groundwater recharge and base flow in nearby streams.
- Reduces local flooding.
- Can be used as a storm water retrofit, by modifying existing landscaped areas, or if a parking lot is being resurfaced.

Limitations

- Cannot be used to treat large drainage areas, limiting their usefulness for some sites.
- Susceptible to clogging by sediment, and therefore pretreatment is a necessary part of design.
- Tend to consume space (usually around 5 percent of the area that drains to them).
- Incorporating retention into a parking lot design may reduce the number of parking spaces available.
- Construction cost can be relatively high compared with other storm water treatment practices.

Standards and Specifications

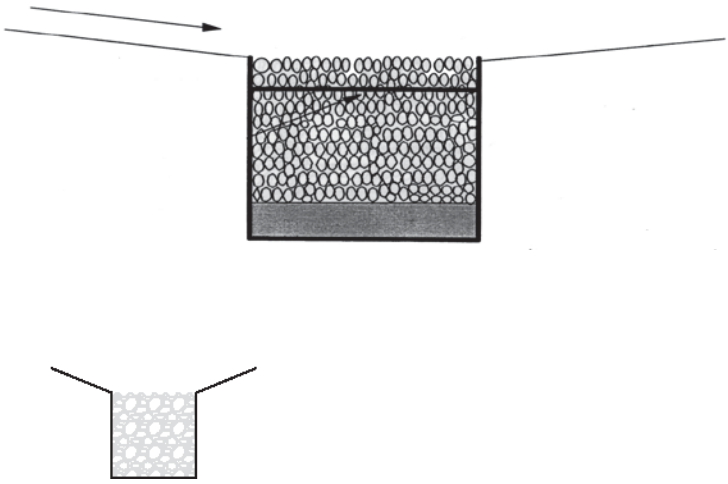
- Retention should usually be used on small sites. When used to treat larger areas, they tend to clog.
- Retention areas are best applied to areas with relatively shallow slopes.
- Retention areas can be applied in almost any soils, since in some design, runoff percolates through a made soil bed, and is returned to the storm water system.
- Retentions should be separated from the water table to ensure that the groundwater does not intersect with the bottom of the retention area.

Maintenance and Inspection

Retention requires seasonal landscaping maintenance. In many cases, retention areas require intense maintenance initially until plants are established, but less maintenance in the long term. Designers should ensure that the retention area is easily accessible for maintenance.

Infiltration Trenches

PC-04



BMP Objectives

- Flow attenuation
- Runoff volume reduction
- Soil erosion
- Sediment control
- Nutrient loading
- Minimize or eliminate storm water pollutants

- Primary Design Benefit
- Secondary Design Benefit
- Little or no design benefit

Definition and Purpose

Infiltration trenches are shallow (3-to 12-foot) excavations that are lined with filter fabric and filled with stone to create underground reservoirs for storm water runoff from a specific design storm.

Appropriate Applications

- Ideally, construction of the infiltration trench should take place after the site has been stabilized.
- Diversion berms or silt fence should be placed around the perimeter of the infiltration trench during all phases of construction. Sediment and erosion controls should be used to keep runoff and sediment away from the infiltration trenches.
- Heavy equipment should not operate on the surface location where the infiltration trenches are planned. Soil compaction will adversely affect the performance of the trench, and infiltration trench sites should be roped off and flagged. During excavation and trench construction, only light equipment such as backhoes or wheel and ladder type trenchers should be used to minimize compaction of the surrounding soils.
- During and after excavation, all excavated materials should be placed downstream, away from the infiltration trench, to prevent re-depositing during runoff events.

Limitations

- Potential failure due to improper siting, design and lack of maintenance

especially if pretreatment is not incorporated into the design.

- Depending on soil conditions, land use in the water shed and groundwater depth, a risk of groundwater contamination may exist.
- Not appropriate for industrial or commercial sites where the release of large amounts or high concentrations of pollutants is possible.
- Susceptible to clogging by sediment, resulting in frequent maintenance.
- Requires frequent inspection and maintenance.

Standards and Specifications

- Infiltration trenches in this BMP Section refer to surface trenches that collect sheet flow from a few lots or properties as opposed to soak away pits which are primarily used for single lot application.
- Careful site selection (discussed further in the Site Sensitivity Analysis Section).
- Treatment of sheet flow from a small drainage area.
- Incorporation of pretreatment and a bypass for high flow events.
- Good construction techniques that prevent smearing, over-compaction, and operation of the trench during the construction period.
- Performance of regular maintenance.

Maintenance and Inspection

- The use of pretreatment BMPs will significantly minimize maintenance requirements of the trench itself. Removing accumulated sediment from a sump pit or a vegetated swale is considerably less difficult and less costly than rehabilitating a trench. Eventually, the infiltration trench should be rehabilitated, but this time span is relative to the effective performance of the trench. With appropriate design and aggressive preventive maintenance, this rehabilitation may not be necessary for a decade or more.
- Once the trench has gone online, inspections should occur after every major storm for the first few months to ensure proper stabilization and function. Water levels in the observation well should be recorded over several days to check trench drainage.
- After the first few months of operations, the infiltration trench should

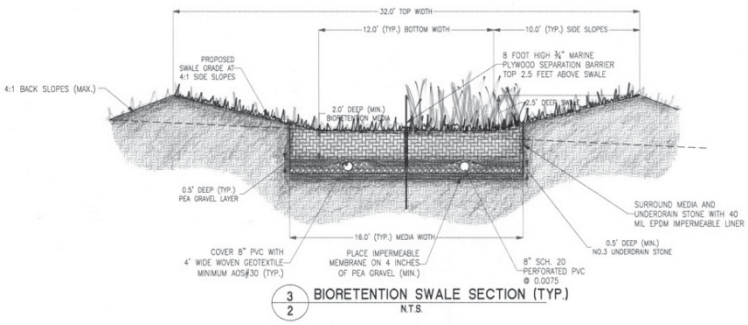
be inspected at least twice per year. Important items to check for include: accumulated sediment, leaves and debris in the pretreatment device, clogging of inlet and outlet pipes and ponded water both inside and on the surface of the infiltration trench.

- When ponding occurs at the surface or in the trench, corrective maintenance is required immediately.

- Clogging in trenches occurs most frequently on the surface. Grass clippings, leaves, and accumulated sediment should be removed routinely from the surface of the trench. If the clogging appears only to be at the surface, it may be necessary to remove and replace the first layer of stone aggregate and the filter fabric.

- Ponded water inside the trench (as visible from the observation well) after 24 hours or several days after a storm event often indicates that the bottom of the trench is clogged, indicating a percolation failure from the bottom. In this case, all of the stone aggregate and filter fabric or media must be removed. Accumulated sediment should be stripped from the trench bottom. At this point the bottom may be scarified or tilled to help induce infiltration. New fabric and clean stone aggregate should be refilled.

- Pretreatment devices associated with trenches should be inspected and cleaned at least twice a year and ideally every other month.



BMP Objectives

- ◑ Flow Attenuation
- ○ Runoff Volume Reduction
- ◑ Soil Erosion
- ◑ Sediment Control
- ◑ Nutrient Loading
- ● Minimize or eliminate storm water pollutants

- ● Primary design benefit
- ◑ Secondary design benefit
- ○ Little or no design benefit

Definition and Purpose

Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff flow to downstream discharge points. They are designed to treat runoff through filtering by the vegetation in the channel, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Swales can be natural or manmade.

Appropriate Applications

- If properly designed, vegetated, and operated, buffer strips can provide reliable water quality benefits in conjunction with high aesthetic appeal.
- Flow characteristics and vegetation type and density can be closely controlled to maximize BMP effectiveness.
- Roadside should act as effective buffer strips when slope and length meet criteria described below.

Limitations

- Can be difficult to avoid channelization.
- May not be appropriate for industrial sites or locations where spills may occur.
- Grassed swales cannot treat a very large drainage area. Large areas may

be divided and treated using multiple swales.

- A thick vegetative cover is needed for these practices to function properly.
- They are impractical in areas with step topography.
- They are not effective and may even erode when flow velocities are high, if the grass cover is not properly maintained.
- Swales are more susceptible to failure if not properly maintained than other treatment BMPs.

Standards and Specifications

- Flow rate based design determined by local requirements or sized so that 85% of the annual runoff volume is discharged at less than the design rainfall intensity.
- Swale should be designed so that the water level does not exceed 2/3rds the height of the grass or 4 inches, whichever is less, at the design treatment rate.
- Longitudinal slopes should not exceed 2.5%.
- Trapezoidal channels are normally recommended but other configurations, such as parabolic, can also provide substantial water quality improvements and may be easier to mow than designs with sharp breaks in slope.
- A diverse selection of low growing plants that thrive under the specific site, climatic, and watering conditions should be specified. Vegetation whose growing season corresponds to the wet season is preferred. Drought tolerant vegetation should be considered especially for swales that are not part of a regulatory irrigated landscaped area.

Maintenance and Inspection

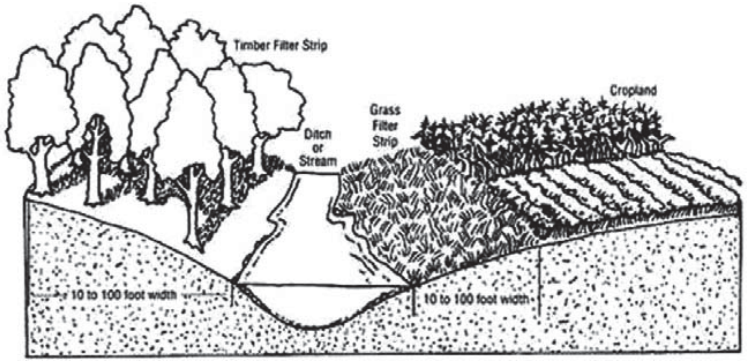
- Inspect swales at least twice annually for erosion, damage to vegetation, and sediment and debris accumulation preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the swale is ready for winter.
- Mowing may only be necessary once or twice a year for safety or aesthetics or to suppress weeds and woody vegetation.
- The need for litter removal is determined through periodic inspection, but litter should always be removed prior to mowing.

- Sediment accumulating near culverts and in channels should be removed when it builds up to 75 mm (3 in.) at any spot, or covers vegetation.

- Regularly inspect swales for pools of standing water.

Vegetative Buffer Strips

PC-06



BMP Objectives

- Flow Attenuation
- Runoff Volume Reduction
- Soil Erosion
- Sediment Control
- Nutrient Loading
- Minimize or eliminate storm water pollutants

- Primary design benefit
- Secondary design benefit
- Little or no design benefit

Definition and Purpose

Grassed buffer strips (vegetated filter strips, filter strips, and grassed filters) are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Filter strips function by slowing runoff velocities and allowing sediment and other pollutants to settle and by providing some infiltration into underlying soils.

Appropriate Applications

- Strips are generally effective in reducing the volume and mass of pollutants.
- Roadside shoulders should act as effective buffer strips when slope and length meet criteria described below.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Buffer strips cannot treat a very large drainage area.
- A thick vegetative cover is needed for these practices to function properly.
- Buffer or vegetative filter length must be adequate and flow characteristics acceptable or water quality performance can be severely limited.
- Vegetative buffers may not provide treatment for dissolved constituents

except to the extent that flows across the vegetated surface are infiltrated into the soil profile.

- This technology does not provide significant attenuation of the increased volume and flow rate of runoff during intense rain events.

Standards and Specifications

- Maximum length (in the direction of flow towards the buffer) of the tributary area should be 60 feet.
- Slopes should not exceed 15%
- Minimum length (in direction of flow) is 15 feet.

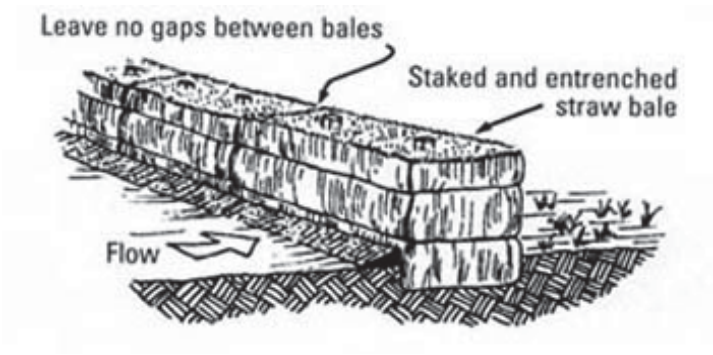
Width should be the same as the tributary area.

- Either grass or a diverse selection of other low growing, drought tolerant, native vegetation should be specified. Vegetation whose growing season corresponds to the wet season is preferred.

Maintenance and Inspection

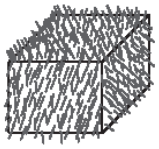
Filter strips require mainly vegetation management. Typical maintenance and frequencies include:

- Inspect strips at least twice annually for erosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before major fall run-off to be sure the strip is ready for winter.
- Recent research on bio filtration swales, but likely applicable to strips indicates that grass height and mowing frequency have little impact on pollutant removal.
- Regularly inspect vegetated buffer strips for pools of standing water.



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Minimize or eliminate storm water pollutants



- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A temporary sediment barrier consisting of a row of entrenched and anchored straw, or hay bales.

Appropriate Applications

- Used as temporary sediment barriers and filter along the toe of fills or around inlets.

Limitations

- Do not use along the toe of fills where the size of the drainage area is greater than one quarter acre per 100 feet of barrier length; maximum slope length and gradient behind the barrier is 100 feet and 50 percent (2:1), respectively.
- Do not use where effectiveness is required for more than 3 months. Useful life of erosion bale is approximately 1 year; the bales may have to be replaced one or more times during construction.
- Under no circumstances should erosion bale be constructed in flowing streams or in swales where flows are likely to exceed 1 cfs, and where the contributing drainage area is greater than 1 acre.
- Not to be used where the control of sediment is critical; in high-risk areas; in areas where they cannot be entrenched as required and firmly anchored; and areas where ponded water could flow onto the roadway.

Standards and Specifications

- The erosion bale must be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked, the excavated soil must be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

- Each bale must be securely anchored by at least two wooden stakes driven toward the previously laid bale to force the bales together. Stakes should be driven toward the previously laid bale to force the bales together. Stakes should be driven into the ground a minimum 1 foot to securely anchor the bales.

- All bales must be either wire-bound or string-tied, and they should be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales (in order to prevent deterioration of bindings).

- The gaps between bales should be filled by wedging with straw to prevent water from escaping between the bales. The main objective is to obtain tight joints. Erosion bales will not filter sediment or pond water if the water is allowed to flow between, around, or under the bales.

- Along toe of fills, install the erosion bales along a level contour and leave enough area behind the barrier for runoff to pond and sediment to settle. A minimum distance of 5 feet from toe of the fill is recommended.

Maintenance and Inspection

- Erosion bales deteriorate quickly and therefore, inspections during construction should be frequent. Repair or replacement should be made promptly as needed.

- Erosion bales must be removed when they have served their usefulness.

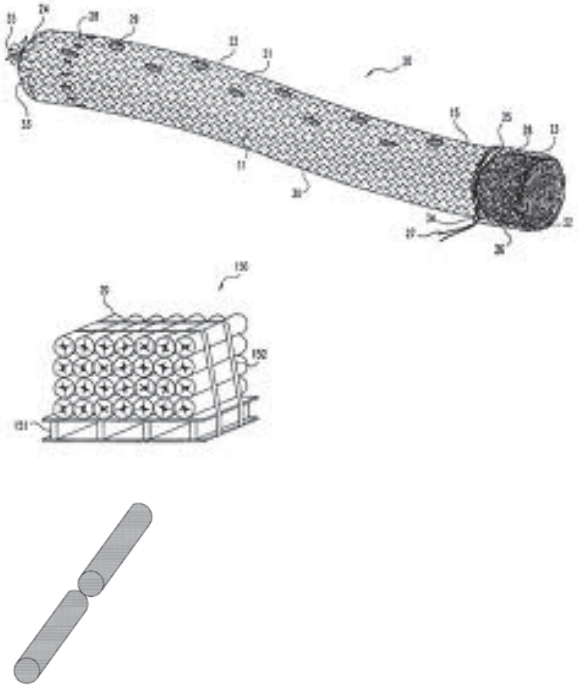
- Trenches where erosion bales were located should be graded and stabilized.

- Sediment accumulation against the erosion bale barrier shall be removed when it reaches half the exposed bale height. Sediments removed must be properly disposed.

- Replace erosion bale as necessary but a minimum of once each year.

Erosion Log

SC-02



BMP Objectives

- ◑ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ○ Nutrient loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Erosion logs filled with rock and other filter material used for erosion and sediment control.

Appropriate Applications

- Used upstream of curb inlets to filter sediment laden runoff. Logs of various lengths can be accommodated with multiple logs installed in series. Typical placement of a log is upstream of an inlet, in the gutter flow line, and also at the entrance of an inlet.
- Used as check dams in ditches and swales for erosion control until vegetative cover is established.
- Used as a temporary feature.

Limitations

- Logs are manufactured BMPs. Refer to the manufacturer for guidelines on limitations.
- Do not use in ditches and swales with continuous flow.

Standards and Specifications

Installation for Check Dam Applications

- When using as a check dam, it should be placed in straight sections to minimize the potential for erosion in the channel bend.

Installation for Curb Inlet Protection (Upstream of inlet)

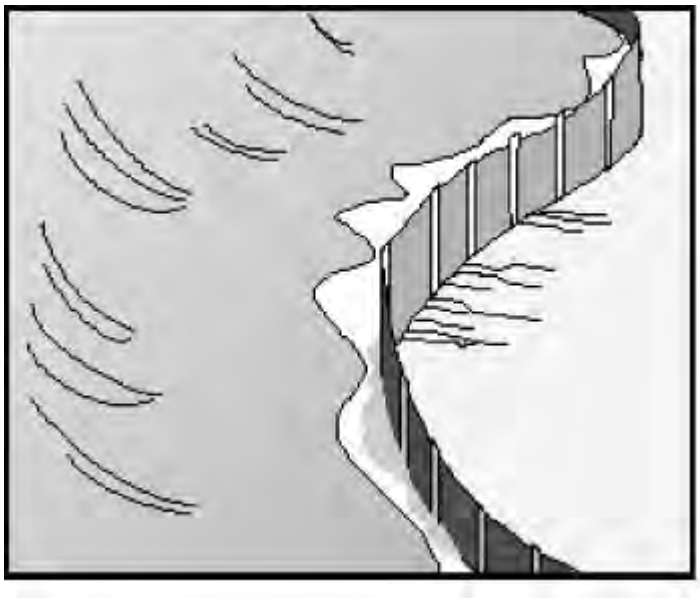
- Logs will be used upgradient of inlet perpendicular to and flush with the curb.
- The maximum height of the curb log should be less than the top of the curb opening. This is to allow overflows to occur during large rainfall events even though sediment-laden runoff will enter the storm drainage system.
- No less than two 10-inch diameter logs must be used in sequence, spaced no more than five feet apart, upgradient of inlet. No less than six logs shall be used if the 4-inch log is chosen.
- Incline at 30 degrees from perpendicular, opposite the direction of flow.

Installation of Curb Inlet Protection

- Identify curb opening dimensions to determine how many logs are required.
- Place the log(s) end-to-end along the curb inlet opening.
- Angle the ends of the log(s) towards the curb inlet opening.

Maintenance and Inspection

- Inspect logs daily for cutes, abrasions, and proper installation, replace or reposition daily. Remove sediment and dispose in a proper manner.
- Discontinue use if logs create a traffic hazard.



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ◑ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A silt fence is a temporary barrier designed to retain sediment on the construction site. It consists of a geotextile attached to supporting posts that are trenched into the ground.

Appropriate Applications

- Install silt fences on the contour (as opposed to up and down a hill) and construct so that flow cannot bypass the ends.
- Ensure that the drainage area is not greater than ¼ acre per 100 feet of fence.
- Make the fence stable for the 10-year peak storm runoff.
- By design, ensure that the depth of impounded water does not exceed 2 feet at any point along the fence.

Limitations

- Not effective for concentrated flows less than 1.0 cfs.
- Proper installation is critical for effective performance.
- Frequent inspection and maintenance required.

Standards and Specifications

- Install silt fences on the contour (as opposed to up and down a hill) and construct so that flow cannot bypass the ends.
- Ensure that the drainage area is no greater than ¼ acre per 100 feet of fence.
- Make the fence stable for the 10-year peak storm runoff.
- By design, ensure that the depth of impounded water does not exceed 2 feet at any point along the fence.
- Types
  - The following three types of silt fences are used for different circumstances.
    - *Heavy Duty:* Use at locations where extra strength is required, such as near water bodies, on areas with unstable wetland soils, steep slopes, highly erodible soils, or high runoff; and on areas that are inaccessible to equipment.
    - *Preassembled:* For light-duty applications, to protect temporary construction or to supplement the other types of silt fence. This type is installed with plow-type equipment with pre-attached stakes spread at 6-foot to 8-foot intervals.
    - *Machine-Sliced Installation:* Appropriate for general use during site grading and to protect ***critical*** areas. Preferred for most sites due to the effective installation method.

Maintenance and Inspection

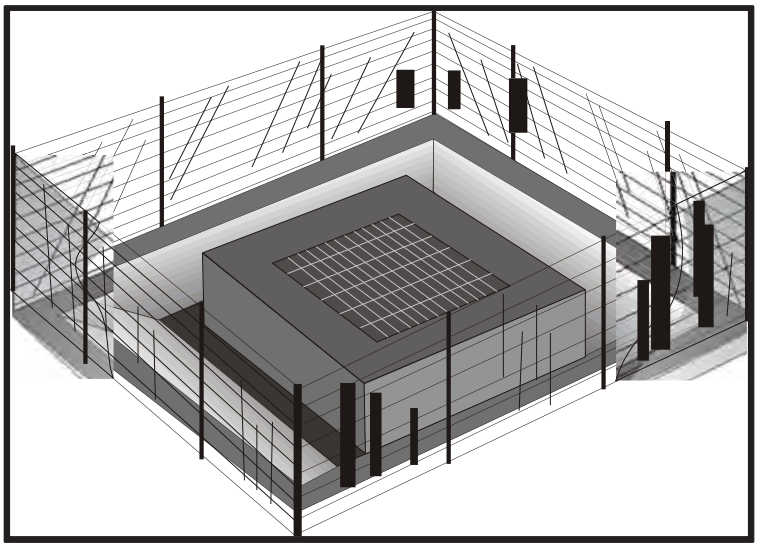
- Improper geotextile is used.
- Geotextile is insufficiently embedded.
- No wire is used on heavy-duty type fence.
- No geotextile overlap exists on heavy-duty fence.
- Soil is not compacted on machine-sliced fence.
- Soil is turned over and/or loosened due to inadequate equipment for machine-sliced fence.
- Components (geotextile, posts, wire, etc.) are inadequately fastened.
- Posts are incorrectly spaced.

- Inspect silt fences at least once a week and after each rainfall, or as required by the NPDES permit. Make any required repairs immediately. Repair scoured areas on the back side of fence at this time to prevent future problems.

- Should the fabric of the silt fence collapse, tear, decompose or otherwise become ineffective, replace it within 24 hours of discovery.

Inlet Protection

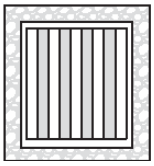
SC-04



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ◑ Soil erosion
- ● Sediment control
- ◑ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

Storm drain inlet protection methods prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area. This can include a sediment filter or an excavated impounding area around a storm drain drop inlet or a curb inlet or a geotextile barrier supported around or across a storm drain inlet.

Appropriate Applications

- Inlet protection should be placed immediately after the storm sewer inlets are installed.
- Inlet protection may need to be removed during certain phases of construction. As soon as practical, inlet protection should be replaced.
- The result that blocking storm drain inlets will have on the site's drainage must be considered. Long sloping streets or ditches designed with several inlets along with length may have a significant amount of surface flow accumulate if inlet protection is used.
- In low areas, a pond will form around inlets. Ponding is necessary for removing sediment form runoff and should be encouraged in conjunction with inlet protection.
- Erosion-control practices should be used upstream to limit movement

from disturbed areas to the inlets.

- The inlet protection should be left in place until the drainage area is stabilized with established vegetation or pavement.

Limitations

- Properly maintaining inlet protection is difficult and often inlets become clogged causing erosion elsewhere.
- Inlet protection devices are generally not very effective at filtering fine-grained sediment or large loads of sediment.
- Ponding or storm water around inlets in roadway under construction can cause access problems and create construction difficulties (saturated subgrade soils).
- Blocking an inlet has caused streets to flood and sediment to build up, creating a safety hazard.

Standards and Specifications

- Sandbags
  - When utilizing sand bags as part of inlet protection, use the following UDOT specifications:
    - Sandbags shall consist of a woven polypropylene fabric sewn together with double stitching.
    - Overall size of the sandbags shall be at least 350 x 650 mm (14 x 26 inches).
  - The polypropylene fabric shall meet or exceed the following:
    - Grab tensile strength ASTM D 4632 420 N, minimum.
    - UV stability ASTM D 4355 70 percent minimum.

- Geotextile
  - The geotextile shall be (preamble fabrics) for use in wrapping surface drain pipe or for other specified drainage applications.
    - Geotextile shall be a woven, nonwoven, or knit fabric of polymeric filaments or yarns such as polypropylene, polyethylene, polyester, or polyamide formed into a stable network such that the filaments/yarns retain their relative position to each other.
    - The geotextile shall be inert to commonly encountered chemicals and shall be free of any chemical treatment or coating that might significantly reduce porosity or permeability.
    - Geotextile shall be uniform in texture, thickness and appearance, and be free of defects, flaws or tears that would significantly alter its strength or filtering properties.

- All authorized repairs shall be completed to the satisfaction of the Engineer.

- The geotextile shall meet or exceed the following:
  - Grab Tensile Strength ASTM D 4632 100 pounds.
  - Seam Breaking Strength ASTM D 4632 90 pounds.
  - Apparent Opening Size (AOS) 40-120 (U.S. Std. sieve size).

- Mulch
  - Mulch shall be:
    - Aggregate mulch will be 3/8 – to – 2 inch, with 5 percent by mass allowable passing the 3/8-inch sieve. Crushing is allowable, but not required.

- Other
  - All other materials shall be as specified on the following details.

Maintenance and Inspection

- After every rainfall that produces runoff, storm sewer inlet protection must be inspected.

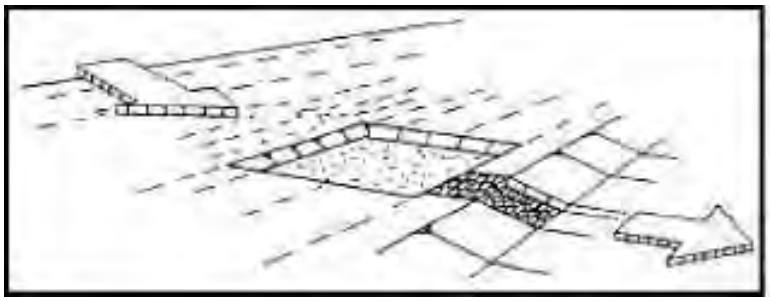
- Sediment should be removed as needed. Excavated sediment should be placed where it will not create an erosion problem. Ponding water should slowly draw down following a rainfall. Geotextiles, rock, and perforated pipes used for inlet protection can easily become plugged with sediment and prevent draw down. Geotextiles and rock should be cleaned or better yet, replaced. Pipe perforations should be cleaned.

- Inlet protection should be removed as soon as the contributing drainage area is stabilized.

- Periodic inspection and maintenance of inlet protection systems is critical. Maintenance includes removing sediment and replacing stones.

Sediment Trap

SC-05



BMP Objectives

- ○ Flow Attenuation
- ○ Runoff Volume Reduction
- ○ Soil Erosion
- ● Sediment Control
- ○ Nutrient Loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Sediment traps are temporary settling ponds having a simple spillway outlet structure stabilized with geotextile and riprap. Sediment traps do not include an outlet structure and pipe.

Appropriate Applications

- Generally the most reliable measures used for treating sediment-laden runoff from construction sites.
- Temporary sediment traps provide good control of coarse sediment and are moderately effective for trapping medium-sized sediment particles.
- They have a low trapping efficiency for fine silt and clay particles.

Limitations

- Sediment basins are relatively large, generally requiring a good deal of site area.
- It can be difficult to keep a sedimentation basin functioning during the entire construction phase.
- On high-density sites, sedimentation basins are often eliminated before the site is fully stabilized.
- Improper construction and maintenance greatly reduces their effectiveness.

- Not particularly effective for fine silts or clay soils, or for intense rainfall events, which can re-suspend sediment within the trap or basin.

Standards and Specifications

- Placed near the perimeter of construction-sites.
- If higher trapping efficiency is desired, a temporary sediment basin with a larger storage volume and longer detention time should be used.
- Trapping efficiency should be optimized within site constraints as described for sediment basins.

Maintenance and Inspection

- Sediment basins require routine maintenance to remain effective as sediment traps. When sediment reaches the maximum level assumed in the design (usually one-third to one-half the basin volume), it must be removed.
- Excavated sediment must be placed in a location where it will not easily be eroded again. In addition to sediment cleanout, sediment basins should be inspected after storms to determine whether the embankment or spillways sustained any damage that requires repair.
- Excavate if the outlet becomes clogged with sediment, it should be cleaned to restore its flow capacity.
- The structure should be inspected after significant runoff events to check for damage or operational problems. Once the contributing drainage area has been stabilized, the structure can be removed or, if possible, modified to become part of the permanent control features.
- Maintain any diversion structure on berm.

BMP Objectives

- Flow Attenuation
- Runoff Volume Reduction
- Soil Erosion
- Sediment Control
- Nutrient Loading
- Minimize or eliminate storm water pollutants

- Primary Design Benefit
- Secondary Design Benefit
- Little or no design benefit

Definition and Purpose

A temporary *sedimentation basin* is a controlled storm water release structure, formed by constructing an embankment of compacted soil across a drainage way and installing an outlet structure and outlet pipe. The purpose of the basin is to detain the sediment-laden runoff from disturbed areas long enough for the majority of the sediment to settle out in the basin. This reduces sediment transport off-site.

Appropriate Applications

- Properly sized sediment basins are relatively effective for trapping medium- and course-grained sediment particles. However, fine silts and clays that are suspended in runoff are very difficult to trap.

Limitations

- Sediment basins are relatively large, generally requiring a good deal of site area.
- It can be difficult to keep a sedimentation basin functioning during the entire construction phase.
- On high-density sites, sedimentation basins are often eliminated before the site is fully stabilized.
- Improper construction and maintenance greatly reduces their effectiveness.

- Not particularly effective for fine silts or clay soils, or for intense rainfall events, which can re-suspend sediment within the trap or basin.

Standards and Specifications

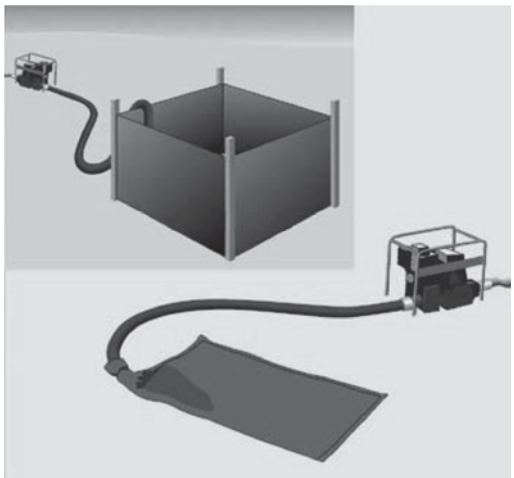
- Trapping efficiency should be optimized within site constraints. This can be accomplished by:
  - Incorporating design criteria which maximize trapping efficiency.
  - Presenting this information clearly in construction documents.
  - Assuring construction is performed according to those documents.
- The value of increased sediment basin size diminishes rapidly once a certain size of basin is reached. For this reason, extraordinary methods such as chemical flocculation may be needed to achieve a very high level of control.
- Sediment basins as with all sediment controls should be used in conjunction with erosion control practices such as temporary seeding to reduce the total amount of sediment washing to them.

Maintenance and Inspection

- Sediment basins require routine maintenance to remain effective as sediment traps. When sediment reaches the maximum level assumed in the design (usually one-third to one-half the basin volume), it must be removed.
- Excavated sediment must be placed in a location where it will not easily be eroded again. In addition to sediment cleanout, sediment basins should be inspected after storms to determine whether the embankment or spillways sustained any damage that requires repair.
- Excavate if the outlet becomes clogged with sediment, it should be cleaned to restore its flow capacity.
- The structure should be inspected after significant runoff events to check for damage or operational problems. Once the contributing drainage area has been stabilized, the structure can be removed or, if possible, modified to become part of the permanent control features.
- Maintain any diversion structure on berm.

Dewatering Structure

SC-07



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ◑ Soil erosion
- ● Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A settling device to treat water from dewatering activities.

Appropriate Applications

- Used to remove sediments from dewatering activities.
- Used as temporary feature.

Limitations

- May not be needed if the water is discharged to a well-stabilized vegetated area. The stabilized area should be capable of filtering sediment while at the same time withstanding the velocity of the discharged water without eroding. A minimum filtering length of 75 feet is recommended for the stabilized area.
- Dewatering operation will require and must comply with all applicable permits.
- Never construct in wetlands.

Standards and Specifications

- Recommended structure consists of an excavated basin surrounded by a perimeter control such as erosion bales or a berm. The excavated area should be at least 3feet deep. The excavated portion will serve for wet storage, and the remainder will provide dry storage.
- The structure's storage volume (measured from the bottom of the

excavation to the crest of the riprap weir) can be calculated as follows:

$$\text{Storage volume } (ft^3) = \text{Pump discharge (gal/min)} \times 0.24$$

The above rate allows for a continuous pumping time of 3 hours. When water reaches the outlet crest, pumping must stop until the water drains down and additional capacity is made available.

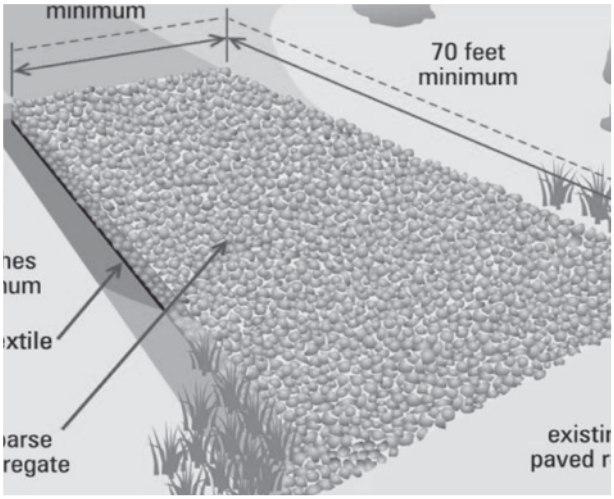
- The wet storage area may be dewatered into a well-vegetated area, but only after a minimum detention time of 6 hours.

Maintenance and Inspection

- Sediments should be removed once they have accumulated to one-half of the excavated depth and properly disposed of.

Stabilized Construction Entrance

SC-08



BMP Objectives

- ○ Flow Attenuation
- ○ Runoff Volume Reduction
- ● Soil Erosion
- ● Sediment Control
- ◐ Nutrient Loading
- ○ Minimize or eliminate storm water pollutants

- ● Primary design benefit
- ◐ Secondary design benefit
- ○ Little or no design benefit

Definition and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Appropriate Applications

- Use at construction sites:
  - Where dirt or mud can be tracked onto public roads.
  - Adjacent to water bodies.
  - Where poor soils are encountered.
  - Where dust is a problem during dry weather conditions.
- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Site conditions will dictate design and need.

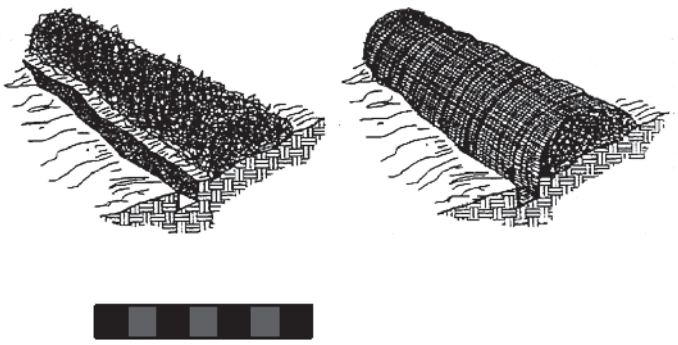
Standards and Specifications

- Limit the points of entrance/exit to the construction sites.
- Limit speed of vehicles to control dust.

- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support the heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. The use of asphalt concrete (AC) grindings for stabilized construction access/roadway is not allowed.
- Use of constructed/manufactured steel plates with ribs for entrance/exit access is allowed with written approval from the RE.
- If aggregate is selected, place crushed aggregate over geotextile fabric to as least 300 mm (12in) depth, or place aggregate to a depth recommended by the RE. Crushed aggregate greater than 75 mm (3 in) and smaller than 150 mm (6 in) shall be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Implement BMP SC-12, “Street Sweeping and Vacuuming” as needed and as required.
- Require all employees, subcontractors, and suppliers to utilize the stabilized construction access.
- All exit locations intended to be used continuously and for a period of time shall have stabilized construction entrance/exit BMPs (SC-08 “Stabilized Construction Entrance”).

Maintenance and Inspection

- Inspect routinely for damage and assess effectiveness of the BMP. Remove aggregate, separate and dispose of sediment of construction entrance/exit is clogged with sediment or as directed by the RE.
- Keep all temporary roadway ditches clear.
- Inspect for damage and repair as needed.



BMP Objectives

- ◑ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A temporary sediment barrier constructed at the perimeter of a disturbed area from the residue materials available from clearing and grubbing the site, and generally covered with filter fabric.

Appropriate Applications

- Used for the purpose of intercepting and retaining sediment from disturbed areas of limited extent.
- Used to prevent sediment from leaving the site.
- Used as a temporary feature.

Limitations

- Should be used only in area of sheet or very low flow.
- Should not be used in a developed area where they could be a visual problem.

Standards and Specifications

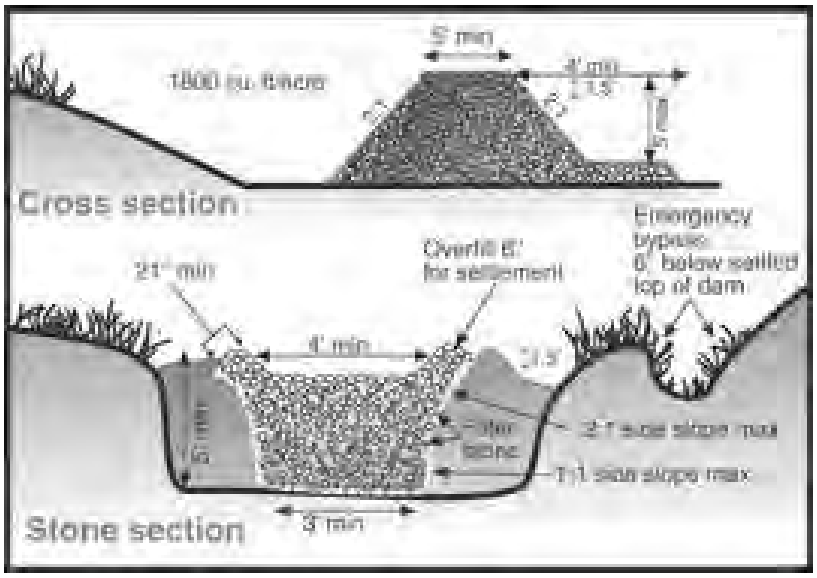
- Height of a brush barrier shall be 3 feet minimum.
- The width of a brush barrier shall be a minimum of 5 feet at its base. The size of brush barriers may vary considerably based upon the amount of material available and the judgment of the designer.
- The barrier shall be constructed by pilling brush, stone, root mat, and

other material from the clearing process into a mounded row on top of the contour.

- The filter fabric shall be cut into lengths sufficient to lie across the barrier from its upslope base to just beyond its peak. Where joints are necessary, the fabric shall be spliced together with a minimum 6 inches overlap and securely sealed.

Maintenance and Inspection

- Inspect frequently during construction, and repair or replace promptly as needed.
- Remove when they have served their usefulness, but not before the upslope areas have been permanently stabilized.
- Sediment accumulated behind the barrier shall be removed when it reaches half the exposed brush barrier height and disposed of properly.



BMP Objectives

- ◑ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ◑ Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A gravel bag barrier is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

Appropriate Applications

- As a linear sediment control measure:
  - Below the tow of slopes and erodible slopes.
  - As sediment traps at culvert/pipe outlets.
  - Below other small cleared areas.
  - Along the perimeter of a site.
  - Down slope of exposed soil areas.
  - Around temporary stockpiles and spoil areas.
  - Parallel to a roadway to keep sediment off paved areas.
  - Along streams and channels.

- As linear erosion control measures:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
  - At the top of slopes to divert runoff away from disturbed slopes.
  - As check dams across mildly sloped construction roads.

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the filter, possibly causing flooding if sufficient spaces does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Berms may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Standards and Specifications

- Locate gravel bag berms on level contours.
  - Slopes between 20:1 and 2:1 (H:V): gravel bags should be placed at a maximum interval of 50 ft. (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: gravel bags should be placed at a maximum interval of 25 ft. (a closer spacing is more effective), with the first row placed the slope toe.
- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.

- For installation near the toe of the slope, consider moving the gravel bag barriers away from the slope toe to facilitate cleaning. To prevent flows behind the barrier, bags can be placed perpendicular to the berm to serve as cross barriers.

- Drainage area should not exceed 5 acres.

Maintenance and Inspection

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

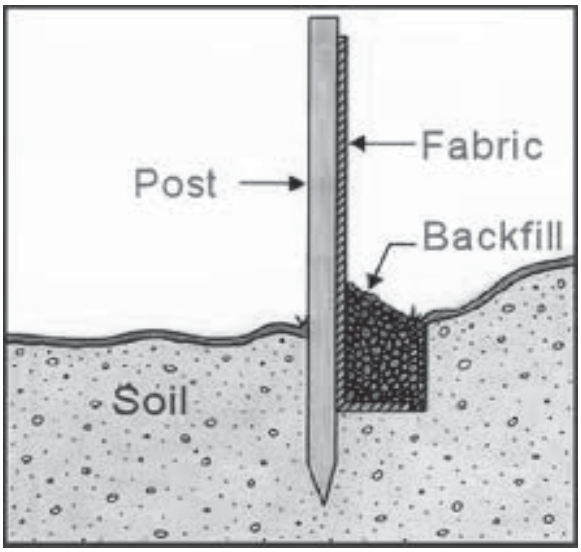
- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.

- Reshape or replace gravel bags as needed.

- Repair washouts or other damage as needed.

- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site of disposed of at an appropriate location.

- Remove gravel bag berms when no longer needed. Remove sediment accumulation and clean, re-grade, and stabilize the area. Removed sediment should be incorporated in the project or disposed of.



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

A silt barrier is a sediment control device is made of foam sewn into a woven geo-synthetic fabric. Triangular in shape, it is 10 to 14 inches high in center, with a 20- to 28-inch base. This BMP can be used to provide settling and/or reduction in water velocity/erosive forces, and it can be used as an alternative to straw bales, silt fence, and rock check dams for containing erosive soils at constructions sites.

Appropriate Applications

- May be used in the following applications:
  - Ditch Check Dam: can be installed in roadway ditches and drainage ditches.
  - Diversion Dam: can be installed as diversion dams or dikes.
  - Continuous Barrier: can be attached end to end to form a continuous barrier in rough terrain.
  - Ponds and Streams: can be used as a positive barrier around streams, ponds, and wetlands.
  - Drop Inlet Protection: can be installed for protecting drop inlets.
  - Temporary Lined Ditch: can be used as a temporary lined ditch.

- This BMP may be used for perimeter protection and in combination with other barriers.

- Used downstream of disturbed areas subject to sheet and rill erosion where drainage area is not greater than 0.25 acre per 100 linear feet of barrier and the slope behind the barrier should be no steeper than 2:1. On relatively flat slopes, the maximum disturbed slope distance should not exceed 100 feet. The allowable disturbed slope distance decreases as the slope gets steeper.

Limitations

- This BMP should not be used:
  - Where flow volume or velocity inhibit BMP function.
  - As a filter.

Standards and Specifications

- Install with the long flap upstream.

- Install to prevent water from going around or under the BMP.

- Install along the contour.

- Anchor with adhesive on asphalt or other hard surfaces, or with staples or stakes on soil or soft surfaces.

Maintenance and Inspection

- During construction, inspect daily and during storm events. Make any required repairs.

- Sediment should be removed when the deposits reach half the height of the silt barrier and properly disposed of.

- Prior to removal, evaluate the site to determine if the silt barrier is no longer needed (the area has stabilized and potential of sediment-laden water exiting the area has passed) and remove sediment buildup in front of the silt barrier. Depending upon replacement, vegetation of site may be necessary.

Street Sweeping/Vacuuming

BMP Objectives

- ○ Flow Attenuation
- ○ Runoff Volume Reduction
- ○ Soil Erosion
- ● Sediment Control
- ● Nutrient Loading
- ○ Minimize or eliminate storm water pollutants

- ● Primary design benefit
- ◑ Secondary design benefit
- ○ Little or no design benefit

Definition and Purpose

When properly designed and implemented, sweeping programs can significantly reduce street and parking lot contributions to pollution loads.

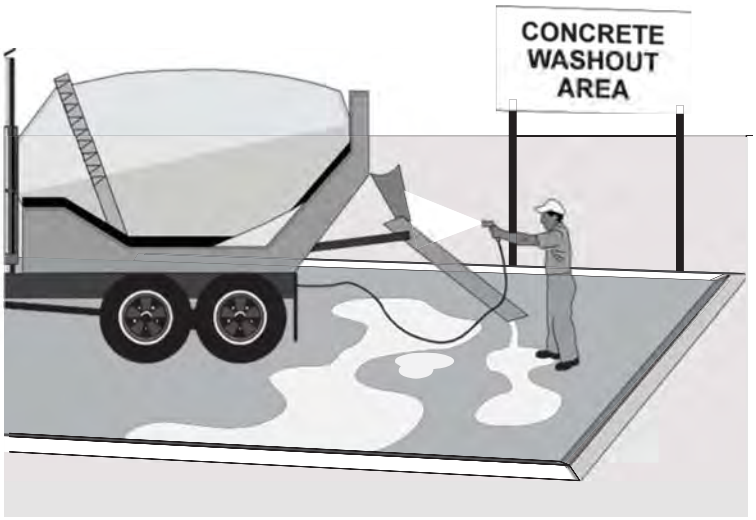
Appropriate Applications

- These practices should be implemented anywhere sediment is tracked from the project sit onto public or private paved roads, typically at points of ingress/egress.

Standards and Specifications

- Sweep in a pattern that keeps spilled materials from being pushed toward catch basin inlets.
- Locate storage and disposal sites for the material collected during sweeping so it will not get back to storm sewer systems.
- Before sweeping, manually rake sand from any adjacent turf areas onto the surface to be swept.
- Use a small pool of highly trained operators.
- At minimum, pavement should be swept twice yearly: in early spring, to collect sand, salt and winter debris, and in fall, to capture leaves and other debris.
- Sweep after activities or in locations that generate debris, such as at construction entry points.

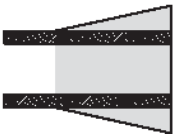
Concrete Washout | WM-01



BMP Objectives

- ● Flow attenuation
- ○ Runoff volume reduction
- ○ Soil erosion
- ● Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◐ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

These are procedures and practices that are designed to minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.

Appropriate Applications

- Concrete waste management procedures and practices are implemented on construction projects where concrete is used as construction material or where concrete dust and debris result from demolition activities.
- Where slurries containing Portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition.
- Where concrete trucks and other concrete-coating equipment are washed on site, when approved by the Resident Engineer (RE).

Limitations

None identified.

Standards and Specifications

- Prefabricated washout containers.
  - The prefabricated containers resist damage and protect well against spills and leaks, and the full-service option relieves the site superintendent of the burden of disposing of materials.

- To prevent leaks on the jobsite, ensure that prefabricated washout containers are watertight.

- Self-installed concrete washouts
  - Self-installed structures are much less reliable than prefabricated containers and are prone to leaks.
  - There are many design options for the washout, but they are preferably built below-grade to prevent breaches and reduce the likelihood of runoff. Above-grade structures can also be used if they are sized and constructed correctly and are diligently maintained.
  - One of the most common problems with self-installed concrete washout facilities is that they can leak or be breached as a result of constant use, so you should take care to use quality materials and inspect the facilities on a daily basis.

- You should size your washouts to handle solids, wash water, and rainfall to prevent overflow.

- 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump truck.

- For larger sites, a below-grade washout should be at least 10 feet wide and sized to contain all liquid and solid waste you expect to generate in between cleanout periods.

- Washouts at smaller sites, such as a single-family residential lot, should be sized to accommodate the expected load and can be smaller than 10 feet wide. Include a minimum 12-inch freeboard in the sizing calculations.

- At larger sites, build an above-grade washout at least 10 feet wide by 10 feet long and size it to contain all liquid and solid waste you expect to generate in between cleanout periods.

- Washouts at smaller sites can be smaller according to the expected capacity needed. Include a 4-inch freeboard in the sizing calculations.

Maintenance and

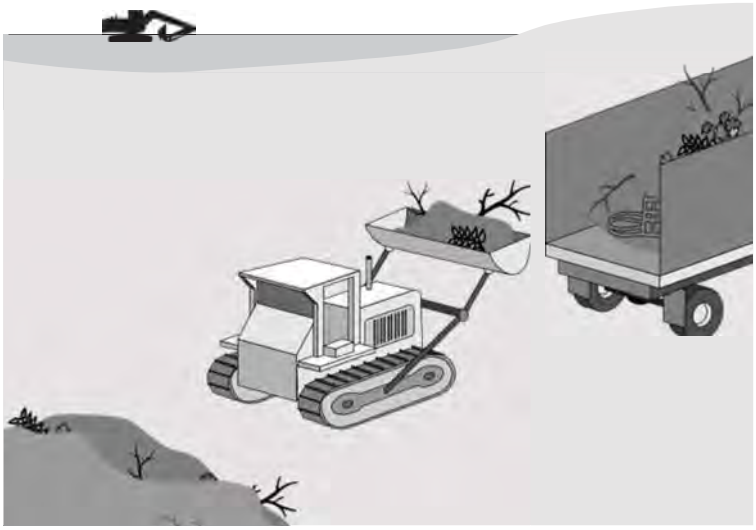
- Check all concrete washout facilities daily to determine if they have

Inspection

been filled to 75 percent capacity, which is when materials need to be removed.

- Both above- and below- ground self-installed washouts should be inspected daily to ensure that plastic linings are intact and sidewalls have not been damaged by construction activities.

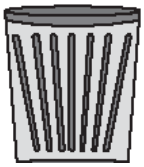
- Prefabricated washout containers should be inspected daily as well to ensure the container is not leaking or nearing 75 percent capacity.



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ● Soil erosion
- ● Sediment control
- ● Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◐ Secondary Design Benefit
- ○ Little or no design benefit



Definition and Purpose

Solid waste management procedures and practices are designed to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, or removal of construction site wastes.

Appropriate Applications

Solid waste management procedures and practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

- Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam and other materials used to transport and package construction materials.

- Highway planting wastes, including vegetative materials, plant containers, and packaging materials.

- Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

Limitations

- Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Standards and Specifications

Collection, Storage, and Disposal

- Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project and properly serviced.
- Littering on the project site shall be prohibited.
- To prevent clogging of the storm drainage system litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.
- Trash receptacles shall be provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Construction debris and litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly regardless of whether the litter has generated by the Contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.
- Full dumpsters shall be removed from the project site and the contents shall be disposed of outside the highway right-of-way.
- Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.
- Construction debris and waste shall be removed from the site every two weeks or as directed by the RE.
- Construction material visible to the public shall be stored or stacked in an orderly manner to the satisfaction of the RE.
- Storm water run-on shall be prevented from contracting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Dumpster washout on the project site is not allowed.

- Notify trash hauling contractors that only watertight dumpster's area acceptable for use on-site.
- Plan for additional containers during the demolition phase of construction.
- Construction waste shall be stored in a designated area approved by the RE.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Keep the site clean of litter debris.
- Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

Maintenance and Inspection

- Police site for litter and debris.
- The WPCM shall monitor onsite solid waste storage and disposal procedures.

BMP Objectives

- ○ Flow attenuation
- ● Runoff volume reduction
- ○ Soil erosion
- ○ Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water runoff

- ● Primary Design Benefit
- ◐ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharges of pollutants to the drainage system or to watercourses from contaminated soil.

Appropriate Applications

- Contaminated soil management is implemented on construction projects in highly urbanized or industrial areas where soil contamination may have occurred due to spills, illicit discharges, and leaks from underground storage tanks.
- It may also apply to highway widening projects in older areas where median and shoulder soils may have been contaminated by aerially deposited lead (ADL).

Limitations

- The procedures and practices presented in this best management practice (BMP) are general. The contractor shall identify appropriate practices and procedures for the specific contaminants known to exist or discovered on site.

Standards and Specifications

Contaminated soils are often identified during project planning and development with known locations identified in the plans and specifications. The contractor shall review applicable reports and investigate appropriate call-outs in the plans and specifications.

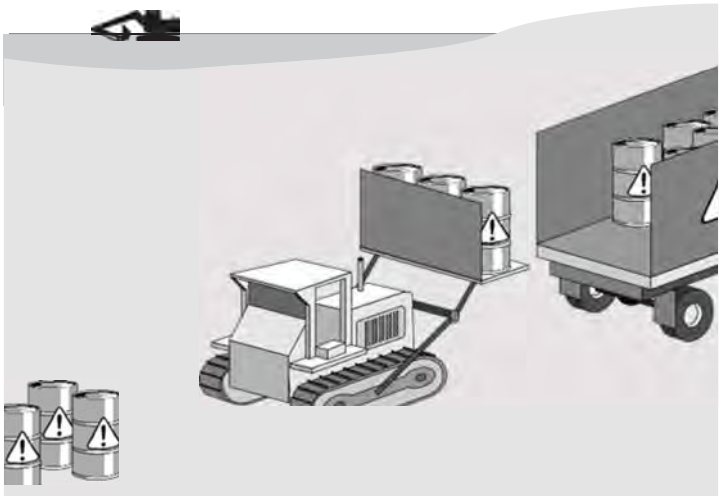
- Contractor may further identify contaminated soils by investigating:
  - Past site uses and activities.
  - Detected or undetected spills and leaks.
  - Acid or alkaline solutions from exposed soil or rock formations high in acid or alkaline forming elements.
  - Look for contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris. Test suspected soils as at a certified laboratory.

Maintenance and Inspection

- The Contractor's Water Pollution Control Manager, foreman, and/or construction supervisor shall monitor on-site contaminated soil storage and disposal procedures.
- Monitor air quality continuously during excavation operations at all locations containing hazardous material.
- Coordinate contaminated soils and hazardous substances/waste management with the appropriate federal, state, and local agencies.
- Inspect hazardous waste receptacles and areas regularly.

Hazardous Waste Management

WM-04



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ○ Soil erosion
- ○ Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◐ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain system or to watercourses.

Appropriate Applications

- This best management practice (BMP) applies to all construction projects.
  - Petroleum Products,
  - Asphalt Products,
  - Concrete Curing Compounds,
  - Pesticides,
  - Acids,
  - Paints,
  - Stains,

- Solvents,
- Wood Preservatives,
- Roofing Tar

Limitations

- Nothing in this BMP relieves the Contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous waste.

Standards and Specifications

- Drums shall not be overfilled and wastes shall not be mixed.
- Unless watertight, containers of dry waste shall be stored on pallets.
- Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourse or drainage systems. Waste paints, thinners, solvents, residues, and sludge that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.
- Ensure that adequate hazardous waste storage volume is available.
- Ensure that hazardous waste collection containers are conveniently located.
- Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
- Minimize production or generation of hazardous materials and hazardous waste on the job site.
- Use containment berms in fueling and maintenance areas and where the potential for spills is high.
- Segregate potentially hazardous waste from non-hazardous construction site debris.
- Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.

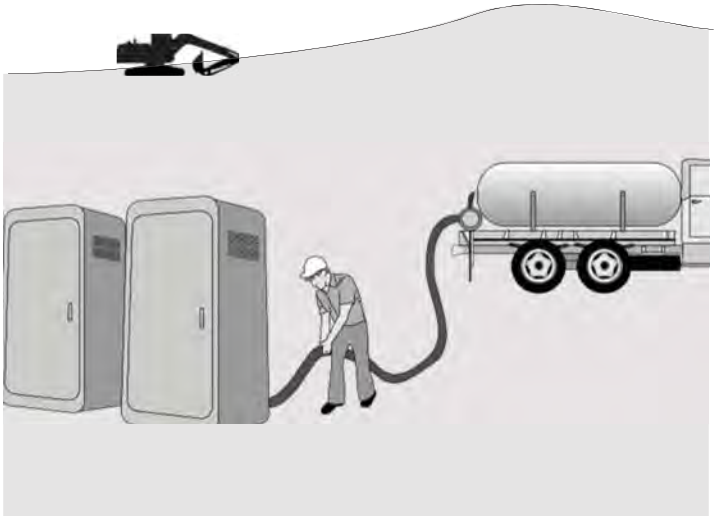
- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
- Place hazardous waste containers in secondary containment.
- Do not allow potentially hazardous waste materials to accumulate on the ground
- Do not mix wastes.

Maintenance and Inspection

- A foreman and/or construction supervisor shall monitor on-site hazardous waste storage and disposal procedures.
- Waste storage areas shall be kept clean, well-organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Storage areas shall be inspected in conformance with the provisions in the contract documents.
- Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
- Hazardous spills shall be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.

Sanitary Waste Management

WM-05



BMP Objectives

- ○ Flow attenuation
- ○ Runoff volume reduction
- ○ Soil erosion
- ○ Sediment control
- ○ Nutrient loading
- ● Minimize or eliminate storm water pollutants

- ● Primary Design Benefit
- ◑ Secondary Design Benefit
- ○ Little or no design benefit

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses.

Appropriate Applications

Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems.

Limitations

- An effective waste management system requires training and signage to promote awareness of the hazards of improper storage, handling, and disposal of wastes.
- The only way to be sure that waste management practices are being followed is to be aware of worker habits and inspect storage areas regularly.
- Extra management time may be required to ensure that all workers are following the proper procedures.

Standards and Specifications

- Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk. Temporary facilities shall also be anchored or staked down to prevent spills or injury.

- Wastewater shall not be discharged or buried within the highway right-of-way.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, shall comply with the local health agency, city, county, and sewer district requirements.
- If using an onsite disposal system, such as a septic system, comply with local health agency requirements.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharge.
- Ensure the sanitary/septic facilities are maintained in good working order by a licensed service.
- Use only reputable, licensed sanitary/septic waste haulers.

Maintenance and Inspection

- Inspect storage and use areas and identify containers that could malfunction and cause leaks or spills.
- Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness.
- Immediately repair or replace any equipment that is found to be defective.

FILE COPY

STATE OF UTAH
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY
Utah Pollutant Discharge Elimination System (UPDES)
General Permit for Discharges from Construction Activities
UPDES Permit No. UTRC00000

This Permit is issued in compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 2004, as amended (the "Act") and the federal Water Pollution Control Act (33 U.S.c. §§ 1251 et. seq., as amended by the Water Quality Act of 1987, P.L. 100-4), and the rules and Regulations made pursuant to those statutes. This permit authorizes "owners/operators" of construction activities (defined in Part 1.1.1 and Appendix A) that meet the requirements of Part 1. of this Utah Pollutant Discharge Elimination System (UPDES) general permit, to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of earth-disturbing activities" (see Appendix A) until "final stabilization" (see Part 2.2.4).

This permit becomes effective on July1, 2014.

This permit and the authorization to discharge expire at midnight on June 30, 2019.

Signed this 6 day of June, 2014

Walter L. Baker, P.E.
Director

Table of Contents

1. **HOW TO OBTAIN PERMIT COVERAGE UNDER THE UTAH CGP** 1
   - 1.1. **ELIGIBILITY CONDITIONS REQUIRED OF ALL PROJECTS.** 1
   - 1.2. **ELIGIBILITY CONDITIONS THAT APPLY DEPENDING ON TYPE OF PROJECT.** 3
   - 1.3. **TYPES OF DISCHARGES AUTHORIZED UNDER THIS PERMIT.** 4
   - 1.4. **SUBMITTING YOUR NOTICE OF INTENT (NOI) AND PERMIT FEE.** 5
   - 1.5. REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE 8
2. **EFFLUENT LIMITATIONS APPLICABLE TO ALL DISCHARGES FROM CONSTRUCTION SITES** (including support activities). 9
   - 2.1. **EROSION AND SEDIMENT CONTROL REQUIREMENTS.** 9
   - 2.2. **STABILIZATION REQUIREMENTS.** 19
   - 2.3. **POLLUTION PREVENTION REQUIREMENTS.** 23
3. **WATER QUALITY-BASED EFFLUENT LIMITATIONS.** 29
   - 3.1. **GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS.** 29
   - 3.2. **DISCHARGE LIMITATIONS FOR IMPAIRED WATERS.** 29
   - 3.3. **DISCHARGES TO WATERS IDENTIFIED AS CATEGORY 1 or 2.** 30
4. **INSPECTIONS.** 31
   - 4.1. **SITE INSPECTIONS.** 31
   - 4.2. **INSPECTIONS BY DWQ OR MS4 OF JURISDICTION.** 35
5. **CORRECTIVE ACTIONS.** 37
   - 5.1. **"CORRECTIVE ACTIONS" DEFINED.** 37
   - 5.2. **REQUIREMENTS FOR TAKING CORRECTIVE ACTION.** 37
   - 5.3. **CORRECTIVE ACTION REQUIRED BY DWQ.** 37
   - 5.4. **CORRECTIVE ACTION REPORT.** 37
6. **STAFF TRAINING REQUIREMENTS.** 39
7. **STORM WATER POLLUTION PREVENTION PLAN (SWPPP).** 40
   - 7.1. **GENERAL REQUIREMENTS.** 40
   - 7.2. **SWPPP CONTENTS.** 40
   - 7.3. **ON-SITE AVAILABILITY OF YOUR SWPPP.** 47
   - 7.4. **REQUIRED SWPPP MODIFICATIONS.** 48
8. **HOW TO TERMINATE COVERAGE.** 50
   - 8.1. **MINIMUM INFORMATION REQUIRED IN NOT.** 50
   - 8.2. **CONDITIONS FOR TERMINATING PERMIT COVERAGE.** 51
   - 8.3. **FINAL INSPECTION ASSOCIATED WITH TERMINATION.** 52
   - 8.4. **HOW TO SUBMIT YOUR NOT.** 52
   - 8.5. **DEADLINE FOR SUBMITTING NOTS.** 52
   - 8.6. **EFFECTIVE DATE OF TERMINATION OF COVERAGE.** 52

Appendix A – Definitions and Acronyms
Appendix B – Small Construction Waivers and Instructions
Appendix C – List with Information onUtah's Waters
Appendix D – Buffer Guidance
Appendix E – List of MS4s with Municipal Storm Water Permits
Appendix F – 2 Year, 24 Hour Storm Frequencies in Utah and Average Annual Rainfall in Utah
Appendix G – Standard Permit Conditions
Appendix H – Notice of Intent Form (NOI)
Appendix I. – Notice of Termination (NOT)

Appendix J – Visual Monitoring Form
Appendix K – Erosivity Waiver Form
Appendix L – Example Self-Inspection Form
Appendix M – Notice for New Owner/General Contractor Operations

1. HOW TO OBTAIN PERMIT COVERAGE UNDER THE UTAH CGP.

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for applying for permit coverage in this Part.

Discharges referred to in this permit are discharges that are typical to construction activity, as described in the following section, that outfall to a surface water in the State of Utah. Typical discharges associated with construction activity present a risk of contaminants for soil, sediment, silt, including soil nutrients (phosphorus and possibly nitrogen), and including chemical pollutants (chemicals in the construction process, and/or oils/grease/fuels). The focus of the EPA and DWQ for the most part is risk of pollution to surface waters.

Construction activity that presents risks of fuel and other normal quantities and types of construction chemicals present a risk of pollution of surface and groundwaters.

Construction activity that presents risks of quantities and types of chemicals that are not normal to typical construction activity may need to pursue permit coverage under an individual UPDES permit.

If storm water is contained on the site (coupled with a rational containment plan with calculations to back it up) no permit is necessary because there will be no discharge from the site, excluding those sites that present a risk to groundwater as said above.

1.1. ELIGIBILITY CONDITIONS REQUIRED OF ALL PROJECTS.

Only those parties and projects that meet all of the following eligibility conditions may be covered under this permit:

1.1.1. Parties that must sign the NOI are the parties shown below that are involved with construction activity on a construction project.

a. Owner: The party that owns/leases the land on which the construction activities occur and has ultimate control over the project and the destiny of a project. The owner has control over construction plans and specifications, including the ability to make modifications at the highest level, to those plans and specifications.

b. Operator: The party (usually the general contractor) that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit).

Note: In the case of land development there may be sub-projects (such as construction of a house in a residential development) associated with the main project. In the case that the parcel of land for the subordinate project is sold to another owner, it must be covered under a separate permit and cannot be covered under the same permit for the development. If the developer is the owner of the development and owner of houses being built in the development (this would be for a house(s) built for speculation unless the prospective owner of the house has not secured ownership yet), the house building may continue to be covered under the original development permit provided the SWPPP for the main project covers the details concerning the activities of the subordinate project.

Note: *Only one NOI permit application can provide coverage for one area under one owner and one operator. If a development gets to the point where lots are sold and another party(ies) takes over control and ownership on sub-project(s) in the development, a new permit must cover the area for the new owner. The developer's original permit can no longer cover that area and the original owner/developer must submit a partial NOT for the area that is sold.*

c. **Operators must provide information, coordination, and/or contract obligations** so that all parties involved in the project perform by SWPPP (see Part 7.) and permit requirements.

1.1.2. The Project:

a. A project covered by this permit will **disturb 1 or more acres of land**, or will disturb less than 1 acre of land but be part of a **common plan** of development or sale that will ultimately disturb 1 or more acres of land; or

b. **A project's discharges have been designated** by the Executive Secretary as needing a permit under UAC 317-8-3.9(1)(a)5. or UAC 317-8-3.9(6)(e)2.;

1.1.3. A project is **located within the state of Utah**, except for Indian Country (Storm water permits for Indian Country within the State must be acquired through EPA Region VIII, except for facilities on the Navajo Reservation or on the Goshute Reservation which must acquire storm water permits through EPA Region IX);

1.1.4. **Discharges** from a project area **cannot**;

a. **already have coverage under** the UPDES CGP or an individual storm water permit for construction activity; or

Note: There can be another UPDES wastewater permit for wastewater generated at the site in a discharge separate from the storm water discharge, and/or other industrial storm water permit coverage for industrial storm water discharged at the site. There cannot be double coverage under this CGP for the same area for construction activity.

b. **be in the process of having coverage** under a different UPDES permit for a storm water (from construction activities) discharge denied, terminated, or revoked.[1,2]

1.1.5. *Endangered Species Act (ESA)*: This permit does not diminish from or alter in any way a permittees responsibility under the ESA. It is the permittees responsibility to comply with the ESA as it pertains to your project's construction activities. There are no requirements in this permit concerning the ESA.

---

[1] Parts 1.1.4.a. and 1.1.4.b. do not include sites currently covered under UTR100000 or UTR300000, which are in the process of obtaining coverage under this permit, and sites covered under this permit which are transferring coverage to a different operator.

[2] Notwithstanding a project being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4.a or 1.1.4.b, above, DWQ may waive the applicable requirement after specific review if it determines that coverage under this permit is appropriate.

1.1.6. *National Historic Preservation Act (NHPA)*:
The permit does not diminish from or alter in any way a permittees responsibility under the NHPA. It is the permittees responsibility to comply with the NHPA as it pertains to your project's construction activities. There are no requirements in this permit concerning the NHPA.

1.2. **ELIGIBILITY CONDITIONS THAT APPLY DEPENDING ON TYPE OF PROJECT.** The following conditions (Parts 1.2.1 through 1.2.4), if applicable, must also be satisfied in order to obtain coverage under this permit.

1.2.1. **Eligibility for Emergency-Related Construction Activities**. If you are conducting earth-disturbing activities in response to a public emergency (e.g., natural disaster, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, your requirements are:

a. If the emergency related activity is accomplished within 30-days you are waived from the normal requirements to submit an NOI and prepare a SWPPP, but you must submit a report to DWQ within 45-days and show:

i. the nature of the emergency work performed,

ii. a description of earth disturbances that occurred,

iii. the proximity of the work to waters of the US, and what was done (if anything) to protect water quality during the emergency work, and

iv. the occurrence of the public emergency must be substantiated.

b. If the emergency activity continues longer than 30-days you are authorized to discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing earth-disturbing activities establishing that you are eligible under this permit. You are also required to provide documentation in your SWPPP to substantiate the occurrence of the public emergency (see 7.2.3.).

1.2.2. **Water Quality Standards – Eligibility for New Sources**. If you are a "new source" (as defined in Appendix A), you are not eligible for coverage under this permit for discharges that have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made, DWQ may notify you that an individual permit application is necessary in accordance with Part 1.4.5. However, your coverage under this permit will be acceptable if you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with water quality standards. In the absence of information demonstrating otherwise, DWQ expects that compliance with the storm water control requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard.

1.2.3. **Discharging to Waters with High Water Quality – Eligibility for New Sources.** If you are a "new source" (as defined in Appendix A), you are eligible to discharge to a Category 1 water if your discharge is temporary and limited and where best management practices will be employed to minimize pollution effects, to a Category 2 water only if your discharge will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, DWQ expects that compliance with the storm water control requirements of this permit, including the requirements applicable to such discharges in Part 3.3.2, will result in discharges that will not lower the water quality of the applicable water. Please refer to Appendix C or look up your receiving waters for water quality information at http://wq.deq.utah.gov/.

Note: *Your project will be considered to discharge to a Category 1 or 2 water if the first surface water to which you discharge is identified by the state as a Category 1 or 2 water. For discharges that enter a storm sewer system prior to discharge, the first surface water to which you discharge is the water body that receives the storm water discharge from the storm sewer system.*

1.2.4. **Use of Cationic Treatment Chemicals**. If you plan to use cationic treatment chemicals (as defined in Appendix A), you are ineligible for coverage under this permit, unless you notify DWQ in advance and DWQ authorizes coverage under this permit (in writing) after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an impairment of the natural life cycle of any aquatic organism downstream.

1.3. **TYPES OF DISCHARGES AUTHORIZED UNDER THIS PERMIT.**
The following is a list of discharges that are allowed under this permit provided that appropriate storm water controls are designed, installed, and maintained:

1.3.1. **Storm water discharges**, including storm water runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under UAC R317-8-3.9(6)(d)10. or UAC R317-8-3.9(6)(e)1.;

1.3.2. Storm water **discharges designated** by DWQ as needing a permit under UAC R317-8-3.9(1)(a)5 or UAC R317-8-3.9(6)(e)2;

1.3.3. Storm water discharges from **construction support activities** (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

a. The support activity is directly related to the construction site required to have permit coverage for storm water discharges;

b. The support activity does not serve multiple unrelated construction projects;

c. The support activity does not continue to operate beyond the completion of the construction activity at the project it supports; and

d. Storm water controls are implemented in accordance with Part 2 and, if applicable, Part 3, for discharges from the support activity areas.

1.3.4. **The following non-storm water discharges** from your construction activity **are allowed** under this permit, provided that you comply with all applicable requirements for these discharges in Part 2:

a. Discharges from emergency fire-fighting activities;

b. Fire hydrant flushings;

c. Properly managed landscape irrigation;

d. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;

e. Water used to control dust;

f. Potable water including uncontaminated water line flushings;

g. Routine external building washdown that does not use detergents, or that have received chemicals to alter pH;

h. Pavement wash waters provided spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents (including Biodegradable soy bean oils and Biodegradable detergents) are not used. You are prohibited from directing pavement wash waters directly into any surface water, storm drain inlet, or storm water conveyance;

i. Uncontaminated air conditioning or compressor condensate;

j. Uncontaminated, non-turbid discharges of ground water (from natural sources) or spring water;

k. Foundation or footing drains where flows are not contaminated with process materials such as solvents, contaminated ground water, or sediment from construction activity; and

1.3.5. Discharges of storm water listed above in Parts 1.3.1, 1.3.2, and 1.3.3, or authorized non-storm water discharges in Part 1.3.4 above, commingled with a discharge authorized by a different UPDES permit and/or a discharge that does not require UPDES permit authorization.

a. Construction dewatering must be permitted under UTG070000 (Construction Dewatering and Hydrostatic Test Permit), and the MS4 (of jurisdiction) notified of the discharge. It does not need to be permitted under UTG070000 if the construction dewatering does not leave the site (it is percolated into the ground at some place on the project site),

1.4. **SUBMITTING YOUR NOTICE OF INTENT (NOI) AND PERMIT FEE.**
Except for permittees with existing permit coverage (permittees with existing coverage from a CGP that was issued earlier and that has now expired just prior to the issuance of

this permit, who are automatically covered under this permit see 1.4.3.), to be covered under this permit, you must submit to DWQ a complete and accurate NOI and the permit fee prior to commencing construction activity. The permit fee is a yearly fee. To remain covered under the permit the permit fee must be submitted again once every year on the yearly anniversary of the submission date of the NOI along with a permit fee until the project is completed.

The NOI certifies to DWQ that you are eligible for coverage according to Part 1.1 and 1.2, and provides information about your construction operation and discharge.

There is one exception to the requirement. It is for an emergency-related project. For this type of project, the NOI must be submitted within 30 calendar days after the commencement of earth disturbing activities (see Part 1.2.1).

In every case a **Storm Water Pollution Prevention Plan (SWPPP)** consistent with Part 7 **must be completed prior to submitting your NOI** for coverage under this permit. Failure to develop a SWPPP and or have a sufficient SWPPP on site can result in fines and or work stoppages.

All NOI applications and project storm water compliance plans must be coordinated with storm water regulated MS4s (municipalities with storm water jurisdiction that are regulated with a municipal storm water permit, see the list of regulated MS4s in Appendix E). MS4s that are regulated under a municipal storm water permit are required to oversee construction activity on disturbances over an acre (or less than an acre if part of a common plan of development that is over an acre) within their jurisdiction. Utah DWQ directly reviews and inspects permittees in all other areas of Utah (except "Indian country").

1.4.1. **How to Submit Your NOI**. NOIs must be entered on DEQ's electronic NOI and storm water system. This can be done on **https://secure.utah.gov/stormwater.** If you do not have access to the internet or are having continual problems with the use of the NOI (CGP permit application) system, contact the DWQ Office at 801-536-4300, and submit a hard copy of the NOI form which can be found on the DWQ construction storm water web site (http://www.waterquality.utah.gov/UPDES/stormwatercon.htm -- see footnote 3 next page). DWQ advises that at some point you create an account for the on-line storm water permit data base so that you can track your permit and have the options to renew and/or terminate your permit (actions that should be done on-line).

1.4.2. **Start and End of Permit Coverage and Deadlines**. Except for projects initiated for emergency situations (for which either the NOI requirement is waived or the NOI must be submitted within 30-days after the commencement of soil disturbing activities, see paragraph 1.2.1), the construction storm water permit must be obtained before soil disturbing activities can begin on a construction site. This permit will officially cover construction activity on a project site immediately after the NOI has been successfully entered into the storm water data base,[3] and the

[3] All storm water NOIs are electronically entered into the SW data base. The vast majority are entered electronically by permittees in the on-line application process. For cases where a permittee is not able to electronically enter an NOI the permittee must submitted a paper form of the NOI to DWQ where it will be entered electronically by DWQ staff.

permit fee is paid. Coverage will remain active contingent on all of the following conditions:

a. The permittee purposely terminates the permit:

   i. a notice of termination (NOT) is submitted electronically (preferably) or in paper form to DWQ.

   ii. where the permitted site is within a regulated MS4 jurisdiction (see Appendix E) the permittee must contact the local MS4 to inform that the project is completed and request a final inspection,

Note: *Termination of the project is not complete without approval through a final inspection.*

b. the yearly permit fee is kept current and renewed year by year for the period of construction activity,

c. when this general permit (UTRC00000) expires it is assumed at this point that coverages will automatically transfer to a succeeding permit, but if not the permittee will have to apply for continued coverage under a new or reissued replacement permit,

d. coverage under the CGP is rescinded or revoked for the project site for administrative reasons for which the permittee will be notified in writing, or

e. in the case, if or when all storm water discharges for the site are permitted under a different general or individual UPDES permit. For which case this permit is terminated on the day the other permit coverage begins.

1.4.3. **Exception to NOI Deadline for "Existing Permits".** Existing permits are construction activities with soil disturbances which require coverage under a UPDES construction storm water permit, and which projects had active and legitimate coverage under UTR300000 at the time of expiration of that general permit, or that received coverage before this permit was issued. Existing projects are automatically "covered" under this permit. The same permit tracking number given under UPDES general storm water permit UTR300000 will continue to identify permit coverage for an existing project under this permit. **Existing projects have <u>6 months</u>** from the issuance date of this permit to update site storm water controls and the site SWPPP to meet requirements in this permit.

1.4.4. **Continuation of Coverage for 'Existing Permits' After this Permit Expires**. If this permit is not reissued or replaced by the expiration date of the general permit, it will be administratively extended by the Director and remain in force and effect until issuance of a comparable CGP replacement. Permit coverage will continue under this permit until the earliest of:

a. authorization of, and an application process, is provided for coverage under a reissued or replacement version of this permit; or

b. the permittee's submittal of a Notice of Termination; or

c. the issuance of an individual permit or denial of coverage (see part 1.4.5 below) for the project's discharges; or

d. A final permit decision by DWQ not to reissue a general permit, at which time DWQ will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will terminate at the end of this time period.

DWQ reserves the right to modify or revoke and reissue this permit under UAC317-8-5.6, in which case you will be notified of any relevant changes or procedures to which you may be subject.

1.4.5. **Procedures for Denial of Coverage**. Following your submittal of a complete and accurate NOI, you may be notified in writing by DWQ that you are not covered, and that you must either apply for and/or obtain coverage under an individual UPDES permit or an alternate general UPDES permit. This notification will include a brief statement of the reasons for this decision and will provide application information. Any interested person may request that DWQ consider requiring an individual permit under this paragraph.

If you are already a permittee with coverage under this permit, the notice will set a deadline to file the permit application, and will include a statement that on the effective date of the individual UPDES permit or alternate general UPDES permit, as it applies to you, coverage under this general permit will terminate. DWQ may grant additional time to submit the application if requested. If you are covered under this permit and fail to submit an individual UPDES permit application or an NOI for an alternate general UPDES permit as required by DWQ, then the applicability of this permit to you is terminated at the end of the day specified by DWQ as the deadline for application submittal. DWQ may take appropriate enforcement action for any unpermitted discharge. If you submit a timely permit application, then when an individual UPDES permit is issued to you or you are provided with coverage under an alternate general UPDES permit, your coverage under this permit is terminated on the effective date of the individual permit or date of coverage under the alternate general permit.

1.5. **REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE.** You must post a sign or other notice conspicuously at a safe, publicly accessible location in close proximity to the project site. At a minimum, the notice must include the UPDES Permit tracking number and an operator contact name (or designee) and phone number and/or email address for obtaining additional UPDES permit, SWPPP, and/or project information. The notice must be located so that it is visible from a public access point that is nearest to the active part of the construction site, and it must use a font large enough to be readily viewed from a public right-of-way. The posted contact number must have a person available for response during business hours. An inquiry made to the posted email address must receive a response within 24-hours week days.

2. EFFLUENT LIMITATIONS APPLICABLE TO ALL DISCHARGES FROM CONSTRUCTION SITES (including support activities).

Note: *If your project is an "existing project" (see Part 1.4.3) or if you are a "new owner/operator of an existing project" (see Part 1.4.3), and it is infeasible for you to comply with a specific requirement in this Part because (1) the requirement was not part of the permit you were previously covered under (i.e., the 2003 or 2008 CGP), you are required to document this fact in your SWPPP and are waived from complying with that requirement. This flexibility applies only to the requirements in Parts 2.1, and 2.3.3 through 2.3.5 (except for Parts 2.3.3.a, 2.3.3.b.ii, 2.3.3.c.iii.1), and 2.3.3.d). This only applies to those portions of your site that have already commenced earth-disturbing activities or where storm water controls implemented in compliance with the previous permit have already been installed.*

This section includes the following types of requirements:

- Erosion and Sediment Control Requirements (Part 2.1)
- Stabilization Requirements (Part 2.2)
- Pollution Prevention Requirements (Part 2.3)

2.1. EROSION AND SEDIMENT CONTROL REQUIREMENTS.

Erosion and sediment controls must be designed, installed, and maintained to minimize the discharge of pollutants from earth-disturbing activities.

2.1.1. General Requirements Applicable to All Construction Sites.

a. **Area of Disturbance**. You are required to minimize the amount of disturbed and exposed soil during construction activities.

b. **Design Requirements**.

Note: *Although many aspects of developing a SWPPP do not require a P.E., there are significant portions or items required in the development of a SWPPP that makes it to where many if not all SWPPPs must include a P.E.in its development. It is not required for a P.E. to stamp the entire SWPPP because operators must have the flexibility to modify a SWPPP. There may be facilities in a SWPPP that need to be stamped and would require a review and to be re-stamped by a P.E. again if modifications occur. For the most part SWPPPs should be designed so that operators have the flexibility to make modifications and updates in the field as is necessary so that improvements can be made for the protection of disturbed soils and the quality of storm water runoff if SWPPP plans prove to be ineffective, or if the conditions at the site turn out to be different than expected. A P.E. knows what is not safe without a stamp.*

i. Storm water controls must be installed to handle what is estimated as normally expected for the area including seasonal considerations. Considerations include storm water run-on and run-off, flow from impervious surfaces, slopes, infiltration potential, and site drainage features.

ii. For temporary/permanent sediment basins and channelized flows design must consider the following factors for storm water controls.

1) expected frequency, intensity, and duration of precipitation;

2) peak flowrates and total storm water volume to minimize downstream channel and streambank erosion in the immediate vicinity of the discharge points; and

3) the range of soil particle sizes expected to be present on the site.

iii. The permittee must **preserve naturally vegetated areas where possible** and if feasible use these areas to maximize infiltration and to reduce pollutant discharges. The use of velocity dissipation devices may be necessary to prevent erosion.

c. **Installation Requirements.**

i. Unless infeasible **storm water controls must be installed before commencing each phase of earth-disturbance** (e.g., buffers or equivalent sediment controls, perimeter controls, exit point controls, storm drain inlet protection) that control discharges from the initial site clearing, grading, and excavating.

Note: *Where it is infeasible to install storm water controls prior to the beginning of earth disturbing activities such controls must be installed immediately following the initial earth disturbance.*

ii. All **storm water controls must be installed in accordance with good engineering and construction practices and manufacturer's specifications** including applicable design specifications.

Note: *Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice, good construction practices and must be explained in your SWPPP.*

d. **Maintenance Requirements.**

i. All erosion and sediment controls required in this Part must remain in effective operating condition during permit coverage and be protected from activities that would reduce their effectiveness.

ii. All erosion and sediment controls must be inspected in accordance with the applicable requirements in Part 4.1, For problems discovered during inspections replacement, repairs, or maintenance must be done immediately following the inspection or in a timely manner as identified in the SWPPP. The permittee must maintain all preserved vegetation, erosion and sediment control measures and other protective measures identified in the SWPPP in effective operating condition for all precipitation events, or before if required by DWQ or MS4 oversight inspectors. . If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable.

iii. Maintenance needs identified by means other than inspections shall be accomplished before the next anticipated storm event, or as necessary to

maintain the continued effectiveness of storm water controls. A description of procedures to ensure the timely maintenance of these measures shall be identified in the SWPPP.

2.1.2. **Erosion and Sediment Control Requirements Applicable to All Sites**.

a. **Natural Buffers or Equivalent Sediment Controls.** (These requirements only apply when a surface water is located within 50 feet of your project's earth disturbances, and in the case of intermittent waters, only to surface waters that have visible water flowing or that typically flow continuously more than two months out of the year).

Note: *Areas that you do not own or that are otherwise outside your operational control may be considered areas of undisturbed natural buffer for purposes of compliance with this part.*

You must ensure that any discharges to surface waters through the area between the disturbed portions of the property and any surface waters located within 50 feet of your site are treated by an area of undisturbed natural buffer and/or additional erosion and sediment controls in order to achieve a reduction in sediment load equivalent to that achieved by a 50-foot natural buffer. Refer to Appendix D (Buffer Guidance) for information to assist you in complying with this requirement, and to Part 2.1.2.a.v. for exceptions to this requirement.

i. **Compliance Alternatives**. You can comply with this requirement in one of the following ways:

1) Provide and maintain a 50-foot undisturbed natural buffer; or

Note: *If your earth disturbances are located 50 feet or further from a surface water, then you have complied with this alternative.*

2) Provide and maintain an undisturbed natural buffer that is less than 50 feet that is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer (see Appendix D); or

3) If it is infeasible to provide and maintain an undisturbed natural buffer of any size, you must implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer (see Appendix D).

Note: *For the compliance alternatives in Parts 2.1.2.a.i.1) and 2.1.2.a.i.2), you are not required to enhance the quality of the vegetation that already exists in the buffer, or provide vegetation if none exists (e.g., arid and semi-arid areas). You only need to retain and protect from disturbance the natural buffer that existed prior to the commencement of construction. Any preexisting structures or impervious surfaces are allowed in the natural buffer provided you retain and protect from disturbance the natural buffer area outside the preexisting disturbance. Similarly, for alternatives 2.1.2.a.i.2) and 2.1.2.a.i.3), you are required to implement and maintain sediment controls that achieve the sediment load reduction equivalent to the undisturbed natural buffer*

that existed on the site prior to the commencement of construction. In determining equivalent sediment load reductions, you may consider naturally non-vegetated areas and prior disturbances. See Appendix D for a discussion of how to determine equivalent reductions.

You must document the compliance alternative you have selected in your SWPPP, and comply with the applicable additional requirements described in Parts 2.1.2.a.ii. below.

The compliance alternative selected above must be maintained throughout the duration of permit coverage, unless you select a different compliance alternative during your period of permit coverage, in which case you must modify your SWPPP to reflect this change.

ii. **Additional Requirements for the Compliance Alternatives in Parts 2.1.2.a.i.1) and 2.1.2.a.i.2)**. If you choose either of the compliance alternatives in Parts 2.1.2.a.i.1) or 2.1.2.a.i.2) above, throughout your period of coverage under this permit, you must comply with the following additional requirements:

1) Where there is a concentrated storm water discharge leaving the site's disturbed area and crossing the natural buffer area (whether the buffer area is a full 50 feet (2.1.2.a.i.1) or less than 50 feet with additional BMPs (2.1.2.a.i.2)), the concentrated flow must have treatment or BMPs to minimize sediment transport, found in the area generating the flow and not just as it crosses the buffer area. Additionally, velocity dissipation devices must be used where erosion is caused by the flow as it crosses the buffer area;

2) Document in your SWPPP the natural buffer width retained on the property, and show the buffer boundary on your site plan; and;

3) Delineate, and clearly mark off, with flags, tape, or other similar marking device all natural buffer areas.

iii. **Additional Requirements for the Compliance Alternatives in Parts 2.1.2.a.i.2) and 2.1.2.a.i.3)**. For compliance alternatives in Parts 2.1.2.a.i.2) and 2.1.2.a.i.3), you must document in your SWPPP the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency.

iv. **Additional Requirement for the Compliance Alternative in Part 2.1.2.a.i.3)**. For compliance alternative in Part 2.1.2.a.i.3), you must also include in your SWPPP a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size.

v. **Exceptions**.

1) If there is no discharge of storm water to surface waters through the area between your site and any surface waters located within 50 feet of your site, you are not required to comply with the requirements in this Part.

This includes situations where you have implemented control measures such as a berm or other barrier that will prevent such discharges.

2) Where no natural buffer exists due to preexisting development disturbances (e.g., structures, impervious surfaces) that occurred prior to the initiation of planning for the current development of the site, you are not required to comply with the requirements in this Part, unless you will remove portions of the preexisting development.

   Where some natural buffer exists but portions of the area within 50 feet of the surface water are occupied by preexisting development disturbances, you are required to comply with the requirements in this Part. For the purposes of calculating the sediment load reduction for either Part 2.1.2.a.i.2) or 2.1.2.a.i.3) above, you are not expected to compensate for the reduction in buffer function from the area covered by these preexisting disturbances. See Appendix D for further information about compliance alternatives in Part 2.1.2.a.i.2) or 2.1.2.a.i.3) above.

   If during your project, you will disturb any portion of these preexisting disturbances, the area disturbed will be deducted from the area treated as natural buffer.

3) For "linear construction projects" (see Appendix A for a definition), you are not required to comply with the requirements in this Part if site constraints (e.g., limited right-of-way) prevent you from meeting any of the compliance alternatives in Part 2.1.2.a.i, provided that, to the extent practicable, you limit disturbances within 50 feet of the surface water and/or you provide supplemental erosion and sediment controls to treat storm water discharges from earth disturbances within 50 feet of the surface water. You must also document in your SWPPP your rationale as to why it is infeasible for you to comply with the requirements in Part 2.1.2.a.i, and describe any buffer width retained and/or supplemental erosion and sediment controls installed.

4) For "small residential lot" construction (i.e., a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a common plan of development or sale that will ultimately disturb greater than or equal to 1 acre), you have the option of complying with the requirements in Appendix D, Part D.2.3.

5) The following disturbances within 50 feet of a surface water are exempt from the requirements in this Part:

   - Construction approved under a CWA Section 404 permit; or
   - Construction of a water-dependent structure or water access area (e.g., pier, boat ramp, trail).

   You must document in your SWPPP if any of the above disturbances will occur within the buffer area on your site.

b. **Perimeter Controls**.

i. **Installation Requirements**: You must install sediment controls along those perimeter areas of your site that will receive storm water from areas where earth disturbing activities are occuring[4] **For linear projects** with rights-of-way that restrict or prevent the use of such perimeter controls, you must maximize the use of these controls where practicable and document in your SWPPP why it is impracticable in other areas of the project.

ii. **Maintenance Requirements**: You must remove sediment before it has accumulated to the point where storm water controls becomes ineffective. Often that is one-half of the above-ground height of any perimeter control. The permittee must follow maintenance specifications for the BMP used.

c. **Sediment Track-Out**. You must minimize the track-out of sediment onto off-site streets, other paved areas, and sidewalks from vehicles exiting your construction site. To comply with this requirement, you must:

i. Restrict vehicle use to properly designated exit points;

ii. Use appropriate stabilization techniques[5] at all points that exit onto paved roads so that sediment removal occurs prior to vehicle exit;

iii. Where necessary, use additional controls[6] to remove sediment from vehicle tires prior to exit; and

iv. Where sediment has been tracked-out from your site onto the surface of off-site streets, other paved areas, and sidewalks, you must remove deposited sediment before it accumulates significantly and is tracked beyond the immediate vicinity of the project (that may be several times a day or once a week, whatever is required to control off site tracking). You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked out sediment into any storm water conveyance, storm drain inlet, or surface water.

Note: *DWQ recognizes that some fine grains may remain visible on the surfaces of off-site streets, other paved areas, and sidewalks even after you have implemented sediment removal practices. Such "staining" is not a violation of Part 2.1.2.c.*

d. **Control Discharges from Stockpiled Sediment or Soil**. For any stockpiles or land clearing debris composed, in whole or in part, of sediment or soil

[4] Examples of perimeter controls include, but are not limited to, natural buffer zones (on the site or off); vegetative filter strips; silt fences; filter berms such as staked or weighted straw wattles, other wattles (sand, gravel, or those that are of a proprietary design); and temporary diversion dikes.
[5] Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, or turf mats.
[6] Examples of additional controls to remove sediment from vehicle tires include, but are not limited to, wheel washing, rumble strips, and rattle plates.

Note: *For the purposes of this permit, sediment or soil stockpiles are defined as the storage for multiple days of soil or other sediment material to be used in the construction project. If a sediment or soil pile is used within a short period of time (e.g., a day or three days especially during dry days), it does not fall under the requirements of this part.*

You must comply with the following requirements:

i. Stockpiles must be located outside of any natural buffers established under Part 2.1.2.a.i and physically separated from other storm water controls (such as perimeter controls or inlet protection) implemented in accordance with Part 2.1, but must be contained within the BMP protected area of the site;

ii. Protect from contact with storm water (including run-on) using a temporary perimeter sediment barrier;[7]

iii. Where practicable, provide cover or appropriate temporary stabilization to avoid direct contact with precipitation or to minimize sediment discharge;

Note: *For 2.1.2.d.iii. the objective is to minimize sediment discharge, the best BMP is to cover the pile; the second best BMP is to stabilize the surface of the pile, the third best is to set filter berms, silt fence, or equivalent around the bottom of the pile, maybe there should be 2 of the 3 suggested BMPs applied. The degree of effort must be commensurate to the risk of sediment loss that could affect water quality.*

iv. Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any storm water conveyance, storm drain inlet, or surface water; and

v. Where practicable, contain and securely protect from wind.

e. **Minimize Dust**. In order to avoid pollutants from being discharged into surface waters you must minimize the generation of dust through the appropriate application of water or other dust suppression techniques (as required in your air quality permit for those that are required to have air quality permits).

i. Minimize the Disturbance of Steep Slopes. You must minimize the disturbance of "steep slopes" (see definition in Appendix A).

Note: *The permit does not prevent or prohibit disturbance on steep slopes. For some projects, disturbance on steep slopes may be necessary for construction (e.g., a road cut in mountainous terrain). If a disturbance to steep slopes is required for the project, DWQ would recognize that it is not economically achievable to avoid the disturbance to steep slopes. However, in cases where steep slope disturbances are required, minimizing the disturbances to steep slopes consistent with this requirement can be accomplished through the implementation of a number of standard erosion and sediment control practices, such as by phasing disturbances to these areas and using stabilization practices designed to be used on steep grades.*

f. **Preserve Topsoil**. You must preserve native topsoil on your site, unless infeasible. Preserving topsoil is not required where the intended function of a

[7]Examples include berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale.

specific area of the site dictates that the topsoil be removed, and/or that the finished surface will be stabilized by a means other than re-vegetation.

Note: *Some projects may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain. In these cases, preserving topsoil at the site would not be feasible. Some sites may not have space to stockpile topsoil on site for later use, in which case, it may also not be feasible to preserve topsoil.*

Note: *Stockpiling of topsoil at off-site locations, or transfer of topsoil to other locations, is an example of a practice that is consistent with the requirements in this Part.*

g. **Minimize Soil Compaction**. In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed, you must either (minimizing soil compaction is not required where the intended function of the specific area of the site dictates that it be compacted):

   i. **Restrict vehicle / equipment use**. Restrict vehicle and equipment use in these locations to avoid soil compaction (except for equipment used for seeding or cat tracking); or

   ii. **Use soil conditioning techniques**. Prior to seeding or planting areas of exposed soil that have been compacted, use techniques that loosen or condition the soils to support vegetative growth, if necessary and feasible.

h. **Protect Storm Drain Inlets**. If you discharge to any storm drain inlet that carries storm water flow from disturbed areas of your site directly to a surface water, and you have authority to access the storm drain inlet, you must:

   i. **Installation Requirements**. Install inlet protection measures[8] that remove sediment from your discharge prior to entry into the storm drain inlet.

Note: *Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.*

   ii. **Maintenance Requirements**. Clean, or remove and replace, storm water protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Inlet protection measures should be maintained in effective working conditions at all times, but particular attention must be given to prepare inlets for a forecasted precipitation event.

i. **Areas of High Altitude/Heavy Snow Conditions**. You must attempt to prepare for the heavy snows by deploying storm water controls prior to the first heavy snow, and have appropriate storm water control measures designed to handle snow melt before heavy snows occur. Dates when snow is expected should be noted in the SWPPP and updated as construction commences into the snow season. Stabilization measures should be deployed at the same time (see Section 2.2.1.c.).

[8] Examples of inlet protection measures include fabric filters, sandbags, gravel with filter fabric and concrete block barriers, weighted fiber rolls, wattles of filter fabric filled with sand/gravel, and proprietary devices designed for inlet protection.

2.1.3. **Requirements Applicable Only to Sites Using These Specific Storm Water Controls**. You are required to comply with the following requirements if you will install any of the following storm water controls at your site:

a. **Constructed Storm Water Conveyance Channels**. Design storm water conveyance channels to avoid unstabilized areas on the site and to reduce erosion, unless infeasible. Minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices[9] within and along the length of any constructed storm water conveyance channel, and at any outlet to provide a non-erosive flow velocity.

b. **Sediment Basins**. If you install a sediment basin , you must comply with the following:

i. **Design requirements**:

1) Provide storage for either (1) the calculated volume of runoff from a 2-year, 24-hour storm (see Appendix F), or (2) 3,600 cubic feet per acre drained;

2) When discharging from the sediment basin, utilize outlet structures that withdraw water from the surface in order to minimize the discharge of sediment and floatable pollutants, unless infeasible; (taking water from the top is warmer, so in a case where you have a TMDL or water sensitive to temperature it would be better to take it from the middle)

Note: *DWQ believes that the circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where surface outlets may not be feasible during certain time periods (although it is expected that they would be used during other periods). If you have determined that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination.*

3) Prevent erosion of (1) the sediment basin using stabilization controls (e.g., erosion control blankets), and (2) the inlet and outlet using erosion controls and velocity dissipation devices; and

4) Sediment basins must be situated outside of surface waters and any natural buffers established under Part 2.1.2.a.i, and must be designed to avoid collecting water from wetlands.

ii. **Maintenance requirements**. Keep basins in effective operating condition and remove accumulated sediment when the basin reaches ½ of the design capacity of the sediment basin.

[9]Examples of velocity dissipation devices include check dams, sediment traps, riprap, or grouted riprap at outlets. Although piped slope drains and geotextile reinforced channels do not control velocity they prevent erosion on slopes.

c. **Use of Treatment Chemicals**. If you plan to use cationic polymers and/or flocculants you must have an approval letter from DWQ. Otherwise you must comply with the following minimum requirements:

i. **Use conventional erosion and sediment controls prior to and after the application of treatment chemicals**. Use conventional erosion and sediment controls prior to chemical addition to ensure effective treatment. Chemicals may only be applied where treated storm water is directed to a sediment control (e.g., sediment basin, perimeter control) prior to discharge.

ii. **Select appropriate treatment chemicals**. Chemicals must be selected that are appropriately suited to the types of soils likely to be exposed during construction and discharged to locations where chemicals will be applied, and to the expected turbidity, pH, and flow rate of storm water flowing into the chemical treatment system or area. If you cannot ensure the appropriate dosage, DWQ will not approve the chemical use.

iii. **Minimize discharge risk from stored chemicals**. Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., spill berms, decks, spill containment pallets), or provide equivalent measures, designed and maintained to minimize the potential discharge of treatment chemicals in storm water or by any other means (e.g., storing chemicals in covered area or having a spill kit available on site).

iv. **Comply with local requirements**. Comply with relevant local requirements affecting the use of treatment chemicals.

v. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier**. You must also use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document specific departures from these practices or specifications and how they reflect good engineering practice.

vi. **Ensure proper training**. Ensure that all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training. Among other things, the training must cover proper dosing requirements.

vii. **Comply with additional requirements for the approved use of cationic chemicals**. If you have been authorized to use cationic chemicals at your site pursuant to Part 1.2.4, and the authorization is conditioned on your compliance with additional requirements necessary to ensure that the use of such chemicals will not impair the life cycle of aquatic organisms downstream.

viii. **Provide proper SWPPP documentation**. You must include documentation in your SWPPP consistent with Parts 7.2.5.h. and 7.2.9.b. on the specific

chemicals and chemical treatment systems you will use, and how you will comply with the requirements in this Part.

d. **Dewatering Practices**. You are prohibited from discharging ground water (or any water, even storm water, see note), that is extracted from excavations, trenches, foundations, vaults, or other similar points of accumulation, unless such waters are covered by the Utah UPDES permit for Construction Dewatering/Hydrostatic Testing. No additional permit is required if the water extracted is allowed to percolate back into the ground or that is otherwise managed where it does not have a surface discharge from the site.

Note: *Water that is present at construction sites, whether it is ground water, storm water, or from where ever, if it is heavily soiled from contact with construction activity it must be covered under the Construction Dewatering/Hydrostatic Testing permit with a total suspended solids limit if it is to be discharged.*

2.2. **STABILIZATION REQUIREMENTS.**

You are required to stabilize exposed portions of your site for all areas with an annual precipitation of over 20 inches in accordance with the requirements of this Part. This Part also includes stabilization and/or other requirements for areas with 20 inches of rainfall per year or less.

Note: *For the purposes of this permit, "exposed portions of your site" means areas of exposed soil that are required to be stabilized. Note that DWQ does not expect that temporary or permanent stabilization measures be applied to areas that are intended to be left unvegetated or unstabilized following construction (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, or materials). However, areas constructed for these kinds of uses should have a finished surface conditioned with placement of a sufficient layer of soil similar to road base (or another kind of structural type soil/gravel layer that is resistant to erosion), and no top soil or organic material, and with compaction (unless gravel is used) to minimize the potential for erosion.*

2.2.1. **Deadlines for Initiating and Completing Stabilization for areas receiving an annual precipitation of more than 20 inches a year**.

a. **Deadline to Initiate Stabilization**. You must initiate soil stabilization measures within 14 days of whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the site.

Note: *Earth-disturbing activities have permanently ceased when clearing and excavation within any area of your construction site that will not include permanent structures has been completed.*

Note: *For the purposes of this permit, DWQ will consider any of the following types of activities to constitute the initiation of stabilization:*

1. *prepping the soil for vegetative or non-vegetative stabilization;*
2. *applying mulch or other non-vegetative product to the exposed area;*
3. *seeding or planting the exposed area;*
4. *starting any of the activities in # 1 to # 3 on a portion of the area to be stabilized, but not on the entire area; and*
5. *finalizing arrangements to have a stabilization product fully installed in compliance with the applicable deadline for completing stabilization in Parts*

2.2.1.b.ii. This list of examples is not exhaustive.

b. **Deadline to Complete Stabilization Activities**. Within 14 calendar days after the initiation of soil stabilization measures consistent with Part 2.2.1.a[10], you are required to have completed:

i. For vegetative stabilization, all activities[11] necessary to initially seed or plant the area to be stabilized; and/or
ii. For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

Note: *During the days (14 days before initiating the process of stabilization) that the permittee has to determine if a section of the project must be temporarily or permanently stabilized, there must be perimeter controls around the area to prevent sediment transport off the site until surface stabilization is in place.*

c. **Stabilization Requirements for High Altitudes and Areas Receiving Heavy Snow**. You must attempt to prepare for the heavy snows by deploying stabilization measures on all disturbed areas prior to the first heavy snow, and have appropriate stabilization measures designed to handle snow melt before heavy snows occur. Dates when snow is expected should be noted in the SWPPP and updated as construction commences into the snow season. Stabilization measures should be deployed at the same time as other runoff controls in anticipation of snow (see Section 2.1.2.i.).

2.2.2. **Stabilization and/or other requirements for areas receiving an annual precipitation of 20 inches of rainfall a year or less (arid and semi-arid areas), drought areas, and areas with seasonally dry periods**.

a. Within 14 calendar days of a temporary or permanent cessation of work in any portion of your site you must initiate installation of one of the following or equivalent. The intensity of the application must be commensurate with the conditions at the site (e.g. soil type, steepness of slopes, weather patterns and seasons, proximity to water body.). The goal is to arrest all sediment transport to within the boundaries of the site up to storms with intensities of ½ inch/hour or greater. The permittee must explain the strategy for stabilization in the SWPPP, and times when higher or lower intense BMPs will be placed and why:

i. Preparation for seeding and seeding or planting (which should be during a wetter season or with irrigation),

Note: *It would be good in arid and semi-arid areas to plan the installation of any irrigation system early in construction sequence so that seeding and planting efforts will be effective.*

---

[10] DWQ may determine, based on an inspection carried out under Part 4.2 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing storm water controls, DWQ may require stabilization to correct this problem.

[11] For example, such activities might include, but are not limited to, soil conditioning, application of seed or sod, planting of seedlings or other vegetation, application of fertilizer, and, as deemed appropriate, watering.

Note: *The lists found in 2.2.2.a.ii, iii, iv, and v. is a guideline. It is not necessary to deploy exactly as prescribed, but whatever is deployed must be effective at minimizing erosion and sediment transport from the site.*

ii. For steeper slopes – geotextile blankets staked as necessary with or without seeding (possibly with mulch under the blanket), fiber rolls staked on the contours every 10 ' (or less) apart with mulch applied to the surface between,

iii. Shallower slopes (15% or less):

1) Cat tracking over straw mulch (moist),

2) surface roughening in loose soil or cat tracking (depending on soil, mulch may have to be applied) with fiber rolls staked not more than 15 feet apart on the contours, on very shallow slopes and less distance apart for steeper slopes, (add mulch on steep end),

3) mulch, hydromulch, possibly with seed, with tackifier if needed,

iv. Flat areas:

1) At minimum, loosened soil, surface roughening with larger depression areas (surface roughening should provide many small depressions to collect storm water) to collect storm water, and with peripheral controls. The surface must be reworked if the soil becomes hardened or compacted.

v. Storm water conveyances:

1) piped slope drains, check dams, rip-rap, geotextile channel protection, or other velocity control and channel protection for all storm water conveyance must be deployed on a slope .

b. Within 14 calendar days after the initiation of seeding/ planting, or for application of control measure to initiate surface stabilization on inactive areas of the site, you must complete all activities necessary to initially seed/plant, stabilize, or control the area to protect from sediment transport[12].

2.2.3. **Deadlines for sites discharging to sensitive waters**. For any portion of the site that discharges to a sediment or nutrient-impaired water (see Part 3.2) or to a water that is identified as Category 1 or 2 for antidegradation purposes (see Part 3.3), you are required to complete the stabilization activities specified in Parts 2.2.1. and/or 2.2.2.

[12] Seed germination in the arid and semi-arid areas of Utah generally occurs in spring. Germination can occur in early fall if a wet season (if the "monsoons" come – a weather pattern that brings moist air from the southwest late summer into fall). Late fall is a good time to plant for spring germination. Germination timing is dictated by altitude, latitude, and often by dryer or wetter weather patterns. The application of seed qualifies as stabilization, however to be effective, seeding (hence stabilization) should be delayed until the spring or fall, or where irrigation can be provided.

within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities.

2.2.4. **Criteria for Stabilization**. To be considered adequately stabilized, you must meet the criteria below depending on the type of cover you are using, either vegetative or non-vegetative.

Note: *Stabilization requirements are more difficult the more arid the area. Re-vegetation from seed in arid areas can take more than 3 years to fully develop. This permit allows termination in arid areas even if final stabilization as defined in Appendix A is not met. The terms to do this are spelled out in 2.2.4.a.ii.*

a. **Vegetative Stabilization**.

Note: *Vegetative stabilization measures for all areas, but especially in arid and semi-arid areas, is very important. Practices such as preservation of topsoil, and the use of compatible indigenous fill/borrow material pays off. Good vegetative management such as preserving existing vegetation, protecting natural buffers, and minimizing grading will prove valuable when attempting to stabilize and terminate the site and it will leave a better product.*

i. For all sites, except those located in arid and semi-arid areas (areas with 20 inches or less of precipitation) or on agricultural lands.

1) If you are vegetatively stabilizing any exposed portion of your site through the use of seed or planted vegetation, you must provide established uniform vegetation (e.g., evenly distributed without large bare areas), which provides 70 percent or more of the vegetative cover that was provided by vegetation prior to commencing earth-disturbing activities. You should avoid the use of invasive species;

2) For final stabilization, vegetative cover must be perennial; and

3) Immediately after seeding or planting the area to be vegetatively stabilized, to the extent necessary to prevent erosion on the seeded or planted area, you must select, design, and install non-vegetative erosion controls that provide cover (e.g., mulch, rolled erosion control products) to the area while vegetation is becoming established. Surface roughening or cat tracking perpendicular to the slope may also be used as a non-vegetative measure that can be used with seeding, but must be monitored because it may be susceptible to erosion during heavier storm events.

ii. For sites located in arid and semi-arid areas (20 inches of precipitation or less), or drought-stricken areas, as these terms are defined in Appendix A, you are considered to have completed final stabilization if both of the following criteria are met:

1) You must attempt to reestablish a vegetative cover using topsoil (topsoil preserved from the site and/or with additional (preferably local) topsoil from offsite), mulch, fertilizer, and/or other methods with seeding and planting to establish a perennial vegetative cover (preferably of an

indigenous seed mix) equivalent to the natural background cover, by design, so that permanent stabilization is expected occur by 3 to 3 and a half years after the project is completed with average precipitation; and

2) In addition to seeding or planting the area to be vegetatively stabilized, you must have non-vegetative erosion controls designed and installed either for permanent placement or temporary placement (of which degradation and decomposition is expected to be complete leaving no litter) that provide cover or BMP controls that are selected and designed purposely for protecting the seed and surface from erosion as much as is possible without active maintenance until the natural stabilizing effect of vegetation is established.

iii. For sites located on land used for agriculture. Disturbed areas on land used for agricultural purposes (e.g., pipelines across crop or range land, staging areas for highway construction) that are restored to their preconstruction agricultural use are not subject to these final stabilization criteria. Areas disturbed that were not previously used for agricultural activities, and areas that are not being returned to preconstruction agricultural use, must meet the conditions for stabilization in this Part.

b. **Non-Vegetative Stabilization**. If you are using non-vegetative controls to stabilize exposed portions of your site, or if you are using such controls to temporarily protect areas that are being vegetatively stabilized, you must provide effective non-vegetative cover[13] to stabilize any such exposed portions of your site.

2.3. **POLLUTION PREVENTION REQUIREMENTS**.
You are required to design, install, and maintain effective pollution prevention measures in order to prevent the discharge of pollutants. Consistent with this requirement, you must:

• Eliminate certain pollutant discharges from your site (see Part 2.3.1);
• Properly maintain all pollution prevention controls (see Part 2.3.2); and
• Comply with pollution prevention standards for pollutant-generating activities that occur at your site (see Part 2.3.3).

These requirements apply to all areas of your construction site and any and all support activities covered by this permit consistent with Part 1.3.3.

2.3.1. **Prohibited Discharges**. You are prohibited from discharging the following from your construction site (this list is not a comprehensive list of prohibited discharges but are listed to clarify that although they are common practices on construction sites they are unacceptable to have in a discharge):

a. Wastewater from washout of concrete, (see Part 2.3.2.d);

[13] For temporary stabilization, examples of temporary non-vegetative stabilization methods include, but are not limited to, hydromulch, straw mulch that is crimped in by cat-tracking or netted and staked, and erosion control blankets. For final stabilization, examples of permanent nonvegetative stabilization methods include, but are not limited to, riprap, gravel, gabions, and geotextiles.

b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, (see Part 2.3.1.d);

c. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;

d. Soaps, solvents, or detergents used in vehicle and equipment washing; and

e. Toxic or hazardous substances from a spill or other release.

2.3.2. **General Maintenance Requirements.**

a. You must ensure that all pollution prevention controls installed in accordance with this Part remain in effective operating condition and are protected from activities that would reduce their effectiveness. You must inspect all pollutant-generating activities and pollution prevention controls in accordance with your inspection frequency requirements in Parts 4.1.2 or 3.2.2.a. to avoid situations that may result in leaks, spills, and other releases of pollutants in storm water discharges to receiving waters, and must document your findings in accordance with Part 4.1.7. If you find that controls need to be replaced, repaired, or maintained, you must make the necessary repairs or modifications in accordance with the following:

i. Initiate work to fix the problem immediately after discovering the problem, and complete such work by the close of the next work day, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance.

ii. When installation of a new pollution prevention control or a significant repair is needed, you must install the new or modified control and make it operational, or complete the repair, by no later than 7 calendar days from the time of discovery, or as directed by the DWQ, MS4, or EPA oversight inspector. If it is infeasible to complete the installation or repair within 7 calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7 calendar day timeframe and document your schedule for installing the storm water control(s) and making it operational as soon as practicable after the 7 calendar day timeframe. Where these actions result in changes to any of the pollution prevention controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within 7 calendar days of completing this work.

2.3.3. **Pollution Prevention Standards**. You are required to comply with the pollution prevention standards in this Part if you conduct any of the following activities at your site or at any construction support activity areas covered by this permit (see Part 1.3.3):

- Fueling and maintenance of equipment or vehicles;
- Washing of equipment and vehicles;
- Storage, handling, and disposal of construction materials, products, and wastes; and
- Washing of applicators and containers used for paint, concrete, or other materials.

The pollution prevention standards are as follows:

a. **Fueling and Maintenance of Equipment or Vehicles**. If you conduct fueling and/or maintenance of equipment or vehicles at your site, you must provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuel, from the area where these activities will take place.[14]

   To **comply** with the prohibition in Part 2.3.1.c, you must:

   i. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR 112 and Section 311 of the CWA.

   ii. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;

   iii. Use drip pans and absorbents under or around leaky vehicles;

   iv. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements;

   v. Clean up spills or contaminated surfaces immediately, using dry clean up measures where possible, and eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and

   vi. Do not clean surfaces by hosing the area down.

b. **Washing of Equipment and Vehicles**.

   i. You must provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing;[15] and

   ii. To comply with the prohibition in Part 2.3.1.d, for storage of soaps, detergents, or solvents, you must provide either (1) cover (e.g., plastic sheeting or temporary roofs) to prevent these detergents from coming into contact with rainwater, or (2) a similarly effective means designed to prevent the discharge of pollutants from these areas (such as tightly closed containers).

c. **Storage, Handling, and Disposal of Construction Products, Materials, and Wastes**. You must minimize the exposure to storm water of any of the products,

---

[14]Examples of effective controls include, but are not limited to, locating activities away from surface waters and storm water inlets or conveyances, providing secondary containment (e.g., spill berms, decks, spill containment pallets)and cover where appropriate, and/or having spill kits readily available.

[15] Examples of effective controls include, but are not limited to, locating activities away from surface waters and storm water inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

materials, or wastes specified below that are present at your site by complying with the requirements in this Part.

Note: *These requirements do not apply to those products, materials, or wastes that are not a source of storm water contamination or that are designed to be exposed to storm water.*

To ensure you **meet** this requirement, you must:

i. For building products[16]: In storage areas, provide either (1) cover (e.g., plastic sheeting or temporary roofs) to prevent these products from coming into contact with rainwater, or (2) a similarly effective means designed to prevent the discharge of pollutants from these areas.

ii. For pesticides, herbicides, insecticides, fertilizers, and landscape materials:

1) In storage areas, provide either (1) cover (e.g., plastic sheeting or temporary roofs) to prevent these chemicals from coming into contact with rainwater, or (2) a similarly effective means designed to prevent the discharge of pollutants from these areas; and

2) Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

iii. For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:

1) To comply with the prohibition in Part 2.3.1.c, store chemicals in water-tight containers, and provide either (1) cover (e.g., plastic sheeting or temporary roofs) to prevent these containers from coming into contact with rainwater, or (2) a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., spill kits), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and

2) Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

iv. For hazardous or toxic waste[17]:

1) Separate hazardous or toxic waste from construction and domestic waste;

2) Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in

[16] Some examples of building products that are typically stored at construction sites include, but are not limited to, asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures.
[17] Examples of hazardous or toxic waste that may be present at construction sites include, but are not limited to, paints, solvents, waste paints or solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids.

accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable state, or local requirements;

3) Store all containers that will be stored outside within appropriately sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in covered area or having a spill kit available on site);

4) Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements; and

5) Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. Do not clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

v. For construction and domestic waste[18]: Provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes. In addition, you must:

1) On work days, clean up and dispose of waste in designated waste containers; and

2) Clean up immediately if containers overflow.

vi. For sanitary waste: Position portable toilets so that they are secure and will not be tipped or knocked over and that they will be positioned at least 10 feet from any storm water conveyance, inlet, curb or gutter; or that they will have secondary containment if tipped.

d. **Washing of Applicators and Containers used for Paint, Concrete, or Other Materials**. To comply with the prohibition in Parts 2.3.1.a and 2.3.1.b, you must provide an effective means of eliminating the discharge of water from the washout and cleanout of stucco, paint, concrete, form release oils, curing compounds, and other construction materials. To comply with this requirement, you must:

i. Direct all washwater into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation; you must segregate paint waste and oily waste from stucco/concrete washout waste and manage the proper disposal separately.

[18] Examples of construction and domestic waste include, but are not limited to, packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials.

ii. Handle washout or cleanout wastes as follows:

1) Do not dump liquid wastes in storm sewers;

2) Dispose of liquid wastes in accordance with applicable requirements in Part 2.3.3.c; and

3) Washout or cleanout activities may be located near the areas where concrete or stucco application takes place (and in accordance with local ordinances), but it should be at least 50 feet and possibly further (where practical) from surface waters, and to the extent practicable, designate areas to be used for these activities and require all conducting such activities to only in these areas.

e. Dispose of hardened concrete waste in ways that are consistent with Utah disposal laws for inert material.

2.3.4. **Emergency Spill Notification**. You are prohibited from discharging toxic or hazardous substances from a spill or other release, consistent with Part 2.3.1.e. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 in accordance with the requirements of 40 CFR Part 110, 40 CFR Part 117, and 40 CFR Part 302 (the federal requirement), and 801-536-4123 (for State agencies), but also you must look up numbers for local health departments and MS4 spill and hazardous waste release reporting as soon as you have knowledge of the discharge. You must also, within 7 calendar days of knowledge of the release, provide a description of the release, the circumstances leading to the release, and the date of the release.

2.3.5. **Fertilizer Discharge Restrictions**. You are required to minimize discharges of fertilizers containing nitrogen or phosphorus. To meet this requirement, you must comply with the following requirements:

a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document departures from the manufacturer specifications where appropriate in Part 7.2.6.b of the SWPPP;

b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;

d. Never apply to frozen ground;

e. Never apply to storm water conveyance channels with flowing water; and

f. Follow all other state, and local requirements regarding fertilizer application.

3. WATER QUALITY-BASED EFFLUENT LIMITATIONS.

3.1. GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS.

Your discharge must be controlled as necessary to meet applicable water quality standards. In the absence of information demonstrating otherwise, DWQ expects that compliance with the conditions in this permit will result in storm water discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or DWQ (or a local inspector representing an MS4) determines, that your discharge is not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Part 5.2.1, and document the corrective actions as required in Part 5.2.2 and Part 5.4. DWQ will also impose additional water quality-based limitations on a site-specific basis, or require you to obtain coverage under an individual permit, if information indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in a DWQ established TMDL.

3.2. DISCHARGE LIMITATIONS FOR IMPAIRED WATERS.

If you discharge to a surface water that is impaired for (1) sediment or a sediment related parameter, such as total suspended solids (TSS) or turbidity, and/or (2) nutrients, including impairments for nitrogen and/or phosphorus, you are required to comply with the requirements in Part 3.2.2.

Note: *For the purposes of this Part, "impaired waters" are waters identified as impaired on the appropriate CWA Section 303(d) list, or waters with a DWQ and EPA-approved or established TMDL. Your construction site will be considered to discharge to an impaired water if the first surface water to which you discharge is identified by DWQ or the EPA pursuant to Section 303(d) of the CWA as not meeting an applicable water quality standard, or is included in a DWQ and EPA-approved or established total maximum daily load (TMDL). In the future discharges under this permit may be required to meet the requirements of an impaired water that may be somewhere down the line from the first water body that the discharge outfalls into. That time may be when this permit is modified or after it is renewed. For discharges that enter a storm sewer system prior to discharge, the first surface water to which you discharge is the waterbody that receives the storm water discharge from the storm sewer system. If you discharge to an impaired water that is impaired for a parameter other than a sediment-related parameter or nutrients, DWQ will inform you if any additional limits or controls are necessary for your discharge to be controlled as necessary to meet water quality standards, including for it to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL, or if coverage under an individual permit is necessary in accordance with Part 1.4.5. If during your coverage under a previous permit, you were required to install and maintain storm water controls specifically to meet the assumptions and requirements of a DWQ established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of this permit.*

3.2.1. **Identify If You Discharge To An Impaired Water**. If you discharge to an impaired water, you must provide the following information in your SWPPP:

- A list of all impaired waters to which you discharge;
- The pollutant(s) for which the surface water is impaired; and
- Whether a TMDL has been approved or established for the waters to which you

discharge.

3.2.2. **Requirements for Discharges to Sediment or Nutrient-Impaired Waters**. If you discharge to a surface water that is impaired for (1) sediment or a sediment related parameter (e.g., total suspended solids (TSS) or turbidity) and/or (2) nutrients (e.g., nitrogen and/or phosphorus), including impaired waters for which a TMDL has been approved or established for the impairment, you are required to comply with the following storm water control requirements, which supplement the requirements applicable to your site in other corresponding parts of the permit.

a. Frequency **of Site Inspection**. You must conduct inspections at the frequency specified in Part 4.1.3.

b. Deadline **to Complete Stabilization**. You must comply with the deadlines for completing site stabilization as specified in Part 2.2.3.

3.3. DISCHARGES TO WATERS IDENTIFIED AS CATEGORY 1 or 2.

3.3.1. **Identify if You Discharge to a Category 1 or Category 2 Water**. If you discharge to a water identified as a Category 1 or Category 2 water, you must indicate so on your NOI. See Appendix C for information on Utah waters.

Note: *For the purposes of this permit, you are considered to discharge to a Category 1 or 2 water if the first surface water to which you discharge is identified as Category 1 or 2. Category 1 or 2 refer to waters identified by the state as high quality waters. For discharges that enter a storm sewer system prior to discharge, the surface water to which you discharge is the first surface water that receives the storm water discharge from the storm sewer system.*

3.3.2. **Requirements for New Projects Discharging to Category 1 or 2 Waters**. For new projects, if you will discharge to a Category 1 or 2 water, you are required to comply with Parts 4.1.3 (inspection frequencies) and 2.2.3. (stabilization deadlines).

4. INSPECTIONS.

4.1. SITE INSPECTIONS.

4.1.1. Person(s) Responsible for Inspecting the Site.

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that the person who conducts inspections is a "qualified person", and currently certified.

Note: *A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact storm water quality, and the skills to assess the effectiveness of any storm water controls selected and installed to meet the requirements of this permit, such as but not limited to the following*:

- Utah Registered Storm Water Inspector (RSI)
- Certified Professional in Erosion and Sediment Control (CPESC)
- Certified Professional in Storm Water Quality (CPSWQ)
- Certified Erosion, Sediment, and Storm Water Inspector (CESSWI)
- Certified Inspector of Sediment and Erosion Control (CISEC)
- National Institute for Certification in Engineering Technologies, Erosion and Sediment Control, Level 3 (NICET)
- Utah Department of Transportation Erosion Control Supervisor (ECS)

4.1.2. **Frequency of Inspections**. At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to Part 4.1.3 or Part 4.1.4:

a. At least once every 7 calendar days; or

b. Once every 14 calendar days and within 24-hours of the occurrence of a storm event of 0.5 inches or greater. To determine if a storm event of 0.5 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall that measures 0.5 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.1.7.a.iv.

Note: *Inspections are only required during the project's normal working hours, however a rainfall event can happen after business hours. If a rain event occurs after hours on Friday it does not need to be inspected until Monday.*

Note: *You are required to specify in your SWPPP which schedule you will be following.*

Note: *"Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.5 inches, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in accordance with Part 4.1.2.b. and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.5 inches or more of rain, you are required to conduct an inspection*

within 24 hours of the first day of the storm and within 24 hours after the end of the storm. Again, inspections are only required during the projects normal working hours.

4.1.3. **Increase in Inspection Frequency for Sites Discharging to Sensitive Waters**. For any portion of the site that discharges to a sediment or nutrient-impaired water (see Part 3.2) or to a water that is identified as Category 1 or 2 (see Part 3.3), instead of the inspection frequency specified in Part 4.1.2, you must conduct inspections in accordance with the following inspection frequencies:

a. Once every 7 calendar days; and

b. Within 24 hours of the occurrence of a storm event of 0.5 inches or greater. To determine if a storm event of 0.5 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall that measures 0.5 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.1.7.a.v

Note: *Inspections are only required during the project's normal working hours, however a rainfall event can happen after business hours. If a rain event occurs after hours on Friday it does not need to be inspected until Monday.*

Note: *"Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.5 inches, even if the storm event is still continuing. Thus, if there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.5 inches or more of rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm. Again inspections are only required during the projects normal working hours.*

Note: *If you qualify for any of the reduced inspection frequencies in Part 4.1.4, you may conduct inspections in accordance with Part 4.1.4 for any portion of your site that discharges to a sensitive water.*

4.1.4. **Reductions in Inspection Frequency**. Your inspection frequency may be reduced as follows:

a. **For Temporarily Stabilized Areas**. You may reduce the frequency of inspections to once per month in any area of your site where the stabilization steps in Parts 2.2.1.b.i, 2.2.1.b.ii, and 2.2.2.b have been completed. When construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.1.2 or 4.1.3, if applicable. You must document the beginning and ending dates of this period in your records.

b. For Permanently Stabilized Areas. If portions of the project area are permanently stabilized before the entire project is completed, stabilized, and terminated, these permanently stabilized areas no longer require an inspection, except in the case of inlet protection for drainage received from surrounding unstabilized areas.

c. **For Frozen Conditions**.

i. If you are suspending earth-disturbing activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (see Appendix A, "thawing conditions") begin to occur if:

1) Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least 30 days based on historic seasonal averages. However, if unexpected weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.1.2 or 4.1.3;

2) Land disturbances have been suspended; and

3) All disturbed areas of the site have been temporarily or permanently stabilized in accordance with Part 2.2.

ii. If you are still conducting earth-disturbing activities during frozen conditions, you may reduce your inspection frequency to once per month if:

1) Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least 30 days based on historic seasonal averages. However, if unexpected weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.1.2 or 4.1.3; and

2) Except for areas in which you are actively conducting earth disturbing activities, disturbed areas of the site have been temporarily or permanently stabilized in accordance with Part 2.2.

You must document the beginning and ending dates of this period in your SWPPP.

4.1.5. **Areas that Need to Be Inspected**. During your site inspection, you must at a minimum inspect the following areas of your site:

a. All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2;

b. All storm water controls (including pollution prevention measures) installed at the site to comply with this permit;

c. Material, waste, borrow, or equipment storage and maintenance areas that are covered by this permit;

d. All areas where storm water typically flows within the site, including drainage ways designed to divert, convey, and/or treat storm water;

e. All points of discharge from the site; and

f. All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe for your inspection personnel. You are also not required to inspect areas of the project that are permanently stabilized except for management of storm water flows flowing onto the area coming from other areas that have not been permanently stabilized.

4.1.6. **Requirements for Inspections.** During your site inspection, you must at a minimum:

a. Check whether all erosion and sediment controls and pollution prevention controls are installed, appear to be operational, and are working as intended to minimize pollutant discharges. Determine if any controls need to be replaced, repaired, or maintained in accordance with Parts 2.1.1.d. and 2.3.2;

b. Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site;

c. Identify any locations where new or modified storm water controls are necessary to meet the requirements of Parts 2 and/or 3;

d. At points of discharge and, if applicable, the banks of any surface waters flowing within your property boundaries or immediately adjacent to your property, check for signs of visible erosion and sedimentation (i.e., sediment deposits) that have occurred and are attributable to discharges from your site; and

e. Identify any and all incidents of noncompliance observed.

f. If a discharge is occurring during your inspection, you are required to:

i. Identify all points of the property from which there is a discharge;

ii. Observe and document the visual quality of the discharge, and take note of the characteristics of the storm water discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other obvious indicators of storm water pollutants (see the form in Appendix J); and

iii. Document whether your storm water controls are operating effectively, and describe any such controls that are clearly not operating as intended or are in need of maintenance.

g. Based on the results of your inspection, initiate corrective action under Part 5.

4.1.7. **Inspection Report.**

a. **Requirement to Complete Inspection Report.** You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report must include the following:

i. The inspection date;

ii. The UPDES CGP permit tracking number;

iii. Names and titles (or position) of personnel making the inspection;

iv. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.1.6;

v. If you are inspecting your site at the frequency specified in Part 4.1.2.b, Part 4.1.3, or Part 4.1.4.c, and you conducted an inspection because of rainfall measuring 0.5 inches or greater, you must include the applicable rain gauge or weather station readings that triggered the inspection; and

vi. If you have determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations that this condition applied to.

b. **Signature Requirements**. Each inspection report must be signed in accordance with Appendix G, Part G.16 (Signatory Requirements) of this permit.

c. **Recordkeeping Requirements**. You are required to keep a current, copy of all inspection reports at the site or at an easily accessible location, so that it can be made available at the time of an onsite inspection or upon request by DWQ. For purposes of this permit, your inspection reports may be kept electronically if the records are:

i. In a format that can be read in a similar manner as a paper record;

ii. Legally defensible with no less evidentiary value than a paper equivalent; and

iii. Accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form.

Note: *All inspection reports completed for this Part must be retained for at least 3 years from the date that your permit coverage expires or is terminated.*

4.2. **INSPECTIONS BY DWQ OR MS4 OF JURISDICTION**.
You must allow an authorized representative of DWQ, the MS4 of jurisdiction, or the EPA; to conduct the following activities at reasonable times:

4.2.1. Enter onto areas of your site, including any construction support activity areas covered by this permit (see Part 1.3.3.), and onto locations where records are kept under the conditions of this permit;

4.2.2. Access and copy any records that must be kept under the conditions of this permit;

4.2.3. Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.3.3.) and any storm water controls installed and maintained at the site; and

4.2.4. Sample or monitor for the purpose of ensuring compliance.

4.2.5. Take photographs; videos; measurements; surveying; or other documentation to ensure or document compliance (with consideration to the permittee for legitimate confidentiality concerns, and for security concerns, including national security issues, if there are any).

5. CORRECTIVE ACTIONS.

5.1. "CORRECTIVE ACTIONS" DEFINED.

Corrective actions are actions you take in compliance with this Part to:

- Repair, modify, or replace any storm water control used at the site;
- Clean up and properly dispose of spills, releases, or other deposits; or
- Remedy a permit violation.

5.2. REQUIREMENTS FOR TAKING CORRECTIVE ACTION.

Immediately take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution for the problem is installed and made operational.

Note: *In this context, the term "immediately" requires permittees to, on the same day a condition requiring corrective action is found (or as soon afterward as possible considering normal work schedule and task size), take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational.*

5.2.1. Install a new or modified control, make it operational, or complete the repair expeditiously and based on urgency[19] installing the storm water control(s), making them operational, or completing a repair as soon as practicable.

5.3. CORRECTIVE ACTION REQUIRED BY DWQ, THE LOCAL MS4, OR THE EPA INSPECTORS.

You must comply with any corrective actions required by DWQ, the local MS4, or the EPA inspectors as a result of permit violations found during an inspection carried out under Part 4.2.

5.4. TRACKING OF CORRECTIVE ACTION.

For each corrective action taken in accordance with this Part, you must make an entry in a corrective action report/log, inspection reports, or other method the permittee has devised to track corrective action, which includes the applicable information in Parts 5.4.1 and 5.4.2.

5.4.1. Within a day or so of discovering the occurrence of a storm water or pollution control problem at your site, you must make an entry in a report/log or other devise for monitoring corrective action of the following:

a. What condition was identified at your site that required corrective action (BMPs were not installed, installed incorrectly, were not effective, or need repairing);

b. The date and time the condition was identified and how it was identified (inspection report, happened to notice it needed maintenance, etc.).

---

[19] What is meant by expeditiously based on urgency is assessing the difficulty of the task, the resources available to complete the task, and the time required to complete the task while considering the urgency of performing the task. A less urgent situation would be placing a storm water control measure in a flat area during a dry season of the year with no precipitation in the forecast and that is a significant distance from a water body or inlet. An urgent situation would be placing a storm water control measure on a slope with precipitation eminent in the forecast and having a water body or inlet close by that would receive the runoff from the area. In any case corrective action should not be put off many days. Direction given during an inspection from DWQ or an MS4 inspector may determine the immediacy needed for the action.

5.4.2. Within 7 calendar days of discovering the occurrence of a problem with a storm water or pollution control measure at your site, you must make an entry in a corrective action report/log (or other corrective action monitoring devise) of the following:

a. Any follow-up actions taken to repair the problem, including the dates such actions occurred;

b. Notice of whether SWPPP modifications are required as a result of the condition identified or corrective action.

5.4.3. **Recordkeeping Requirements**. You are required to keep a current copy of all corrective action entries at the site or at an easily accessible location, so that it can be made available at the time of an onsite inspection or upon request by DWQ or the local jurisdictional MS4. For purposes of this permit, your corrective action entries may be kept electronically if the records are:

a. In a format that can be read in a similar manner as a paper record;

b. Legally defensible with no less evidentiary value than a paper equivalent; and

c. Accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be, if the records were stored in paper form.

All corrective action entries completed for this Part must be retained for at least 3 years from the date that your permit coverage expires or is terminated.

6. **STAFF TRAINING REQUIREMENTS.**
Prior to the commencement of earth-disturbing activities or pollutant-generating activities, whichever occurs first, you must ensure and document that the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:

- Personnel who are responsible for the design, installation, maintenance, and/or repair of storm water controls (including pollution prevention measures);
- Personnel responsible for the application and storage of treatment chemicals (if applicable);
- Personnel who are responsible for conducting inspections as required in Part 4.1.1; and
- Personnel who are responsible for taking corrective actions as required in Part 5.

Notes: *(1) If the person requiring training is a new employee, who starts after you commence earth-disturbing or pollutant-generating activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit. (2) For emergency-related construction activities, the requirement to train personnel prior to commencement of earth-disturbing activities does not apply, however, such personnel must have the required training prior to NOI submission.*

You are responsible for ensuring that all activities on the site comply with the requirements of this permit. Although you are not required to provide or document formal training for subcontractors or other outside service providers, you must ensure (through a contract if necessary) that such personnel understand and perform by any requirements of the permit and the SWPPP that may be affected by the work they are subcontracted to perform.

At a minimum, personnel must be trained to understand the following if related to the scope of their job duties (e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections):

- The location of all storm water controls on the site required by this permit, and how they are to be maintained;
- The proper procedures to follow with respect to the permit's pollution prevention requirements; and
- When and how to conduct inspections, record applicable findings, and take corrective actions.

7. STORM WATER POLLUTION PREVENTION PLAN (SWPPP).

7.1. GENERAL REQUIREMENTS.

7.1.1. **Requirement to Develop a SWPPP Prior to Submitting Your NOI**. All owner/operators associated with a construction project to be covered under this permit must develop a SWPPP. You are required to develop your site's SWPPP prior to submitting your NOI. At a minimum, your SWPPP must include the information required in Part 7.2 and as specified in other parts of the permit.[20] You must also update the SWPPP as required in Part 7.4.

Note: *Although many aspects of developing a SWPPP do not require a P.E., there are significant portions or items required in the development of a SWPPP that makes it to where many if not all SWPPPs must include a P.E.in its development. It is not required for a P.E. to stamp the entire SWPPP because operators must have the flexibility to modify a SWPPP. There may be facilities within a SWPPP that need to be stamped and would require a review and to be re-stamped by a P.E. again if modifications occur. For the most part SWPPPs should be designed so that operators have the flexibility to make modifications and updates in the field as is necessary so that improvements can be made for the protection of disturbed soils and the quality of storm water runoff if SWPPP plans prove to be ineffective, or if the conditions at the site turn out to be different than expected. A P.E. knows what is not safe without a stamp.*

Note: *You may develop an electronic SWPPP that is stored on the internet as long as, 1) the SWPPP can be accessed during an inspection, and 2) site personnel know how to, and regularly access the SWPPP to manage and modify the site and SWPPP in accordance with requirements of this permit as if it were as accessible as a hard copy on the site.*

Note: *If your project is an "existing project"[21] or if you are a new owner and/or operator of an existing project", you are not required to meet the requirements of this permit until 6months after this permit has been issued, however, you must meet the requirements of the previous permit (UTR300000) during that 6 month period (see permit 1.4.3).*

7.2. SWPPP CONTENTS.

Your SWPPP must include the following information, at a minimum.

7.2.1. **Storm Water Team**. Each owner/operator, must assemble a "storm water team," which is responsible for overseeing the development of the SWPPP, any later modifications to it, and for compliance with the requirements in this permit.

The SWPPP must identify the personnel (by name or position) that are part of the storm water team, as well as their individual responsibilities. Each member of the storm water team must have ready access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

---

[20]The SWPPP does not establish the effluent limits that apply to your site's discharges; these limits are established in this permit in Parts 2 and 3.

[21] Your project started before this permit was issued, and you had active and legitimate coverage under UTR300000 at the time of expiration of UTR300000.

7.2.2. **Nature of Construction Activities**. The SWPPP must describe the nature of your construction activities, including the size of the property (in acres) and the total area expected to be disturbed by the construction activities (in acres), construction support activity areas covered by this permit (see Part 1.3.3), and the maximum area expected to be disturbed at any one time.

7.2.3. **Emergency-Related Projects**. If you are conducting earth-disturbing activities in response to a public emergency (see Part 1.2.1), you must document the cause of the public emergency (e.g., natural disaster, extreme flooding conditions, etc.), provide information substantiating its occurrence (e.g., state disaster declaration or similar state or local declaration), and provide a description of the construction necessary to reestablish effected public services.

7.2.4. **Sequence and Estimated Dates of Construction Activities**. The SWPPP must include a description of the intended sequence of construction activities, including a schedule of the estimated start dates and the duration of the activity, for the following activities:

a. Installation of storm water control measures, and when they will be made operational, including an explanation of how the sequence and schedule for installation of storm water control measures complies with Part 2.1.1.c.i. and of any departures from manufacturer specifications pursuant to Part 2.1.1.c.ii.;

b. Commencement and duration of earth-disturbing activities, including clearing and grubbing, mass grading, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;

c. Cessation, temporarily or permanently, of construction activities on the site, or in designated portions of the site;

d. Final or temporary stabilization of areas of exposed soil. The dates for stabilization must reflect the applicable deadlines to which you are subject in Part 2.2.1 and 2.2.2; and

e. Removal of temporary storm water conveyances/channels and other storm water control measures, removal of construction equipment and vehicles, and cessation of any pollutant-generating activities.

Note: *If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the permittee to meeting these projections. When departures from initial projections are necessary, this should be documented in the SWPPP itself or in associated records, as appropriate.*

7.2.5. **Site Map**. The SWPPP must include a legible site map, or series of maps, showing the following features of your project:

Note: *Included in the project site are any construction support activities covered by this permit (see Part 1.3.3).*

a. Boundaries of the property and of the locations where construction activities will occur, including:

   i. Locations where earth-disturbing activities will occur, noting any phasing of construction activities;

   ii. Approximate slopes before and after major grading activities. Note areas of steep slopes, as defined in Appendix A;

   iii. Locations where sediment, soil, or other construction materials will be stockpiled;

   iv. Locations of any crossings of surface waters;

   v. Designated points on the site where vehicles will exit onto paved roads;

   vi. Locations of structures and other impervious surfaces upon completion of construction; and

   vii. Locations of construction support activity areas covered by this permit (see Part 1.3.3).

b. Locations of all surface waters, including wetlands, that exist within or in the immediate vicinity of the site. Indicate which water bodies are listed as impaired, and which are identified as Category 1 or 2 waters;

c. The boundary lines of any natural buffers provided consistent with Part 2.1.2.a.i.

d. Topography of the site, existing vegetative cover (e.g., forest, pasture, pavement, structures), and drainage pattern(s) of storm water and authorized non-storm water flow onto, over, and from the site property before and after major grading activities;

e. Storm water and allowable non-storm water discharge locations, including:

   i. Locations of any storm drain inlets on the site and in the immediate vicinity of the site; and

Note: *The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.*

   ii. Locations where storm water or allowable non-storm water will be discharged to surface waters (including storm sewer systems and/or wetlands) on or near the site.

f. Locations of all potential pollutant-generating activities identified in Part 7.2.6;

g. Locations of storm water control measures; and

h. Locations where tackifiers, polymers, flocculants, fertilizers, or other treatment chemicals will be used and stored.

7.2.6. **Construction Site Pollutants**. The SWPPP must include the following:

a. A list and description of all the pollutant-generating activities[22] on your site.

b. For each pollutant-generating activity, an inventory of pollutants or pollutant constituents (e.g., sediment, fertilizers and/or pesticides, paints, solvents, fuels) associated with that activity, which could be exposed to rainfall, or snowmelt, and could be discharged from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to storm water discharges. You must also document any departures from the manufacturer's specifications for applying fertilizers containing nitrogen and phosphorus, as required in Part 2.3.5.a.

7.2.7. **Non-Storm water Discharges**. The SWPPP must also identify all sources of allowable non-storm water discharges listed in Part 1.3.4. All non-storm water discharges must be managed or treated to prevent a discharge of pollutants.

Note: Allowable discharges listed in section 1.3.4. must be managed such that they are infiltrated into the ground so sediment and any oil sheen will be filtered out into surface soils appropriately (not overloading soil capacity to degrade pollutants), or be otherwise treated so that pollutants are not discharged with storm water.

7.2.8. **Buffer Documentation**. If you are required to comply with Part 2.1.2.a because a surface water is located within 50 feet of your project's earth disturbances, you must describe which compliance alternative you have selected for your site, and comply with any additional requirements to provide documentation in Part 2.1.2.a.

7.2.9. **Description of Storm water Control Measures**.

a. **Storm water Control Measures to be Used During Construction Activity**. The SWPPP must describe all storm water control measures that are or will be installed and maintained at your site to meet the requirements of Part 2. For each storm water control measure, you must document:

i. Information on the type of storm water control measure to be installed and maintained, including design information;

ii. What specific sediment controls will be installed and made operational prior to conducting earth-disturbing activities in any given portion of your site to meet the requirement of Part 2.1.2.b.i.;

iii. For exit points on your site, document stabilization techniques you will use and any additional controls that are planned to remove sediment prior to vehicle exit consistent with Part 2.1.2.c.; and

[22] Examples of pollutant-generating activities include, but are not limited to: paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations.

iv. For projects at high altitudes that expect long seasons of heavy snow, you must document in your SWPPP when the snow season is expected so spring runoff controls can be installed before snowfall.

v. For linear projects, where you have determined that the use of perimeter controls in portions of the site is impracticable, document why you believe this to be the case (see Part 2.1.2.b.i.).

b. **Use of Treatment Chemicals**. If you plan to use cationic polymers and/or flocculants, you must have an approval letter from DWQ. Otherwise for treatment chemicals at your site you must include the following in your SWPPP:

i. A listing of all soil types[23] that are expected to be exposed during construction and that will be discharged to locations where chemicals will be applied. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction.

ii. A listing of all treatment chemicals to be used at the site, and why the selection of these chemicals is suited to the soil characteristics of your site;

iii. If you have been authorized by DWQ to use cationic treatment chemicals, include the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards or a fish kill;

iv. The dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage;

v. Information from any applicable Material Safety Data Sheets (MSDS);

vi. Schematic drawings of any chemically-enhanced storm water controls or chemical treatment systems to be used for application of the treatment chemicals;

vii. A description of how chemicals will be stored consistent with Part 2.1.3.c.iii.

viii. References to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and

ix. A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.

c. **Stabilization Practices**. The SWPPP must describe the specific vegetative and/or non-vegetative practices that will be used to comply with the requirements in Part 2.2, including:

[23] Information on soils may be obtained at http://websoilsurvey.nrcs.usda.gov/app/.

i. If you will be complying with the stabilization deadlines specified in Part 2.2.2., you must indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions; and

ii. For projects at high altitudes that expect long seasons of heavy snow, you must document in your SWPPP when the snow season is expected and so stabilization measures for spring runoff can be installed before snowfall.

7.2.10. **Pollution Prevention Procedures.**

a. **Spill Prevention and Response Procedures.** The SWPPP must describe procedures that you will follow to prevent and respond to spills and leaks consistent with Part 2.3, including:

i. Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and

ii. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.4 and established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.

You may also reference the existence of Spill Prevention Control and Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by a UPDES permit for the construction activity, provided that you keep a copy of that other plan onsite.

Note: *Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP.*

b. **Waste Management Procedures.** The SWPPP must describe procedures for how you will handle and dispose of all wastes generated at your site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.

7.2.11. **Procedures for Inspection, Maintenance, and Corrective Action.** The SWPPP must describe the procedures you will follow for maintaining your storm water control measures, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.1.d., Part 2.3.2, Part 4, and Part 5 of the permit. The following information must also be included in your SWPPP:

a. Personnel responsible for conducting inspections;

b. The inspection schedule you will be following, which is based on whether your site is subject to Part 4.1.2 or Part 4.1.3, and whether your site qualifies for any of the allowances for reduced inspection frequencies in Part 4.1.4. If you will be conducting inspections in accordance with the inspection schedule in Part 4.1.2.b. or Part 4.1.3, the location of the rain gauge on your site or the address of the weather station you will be using to obtain rainfall data;

c. If you will be reducing your inspection frequency in accordance with Part 4.1.4.c., the beginning and ending dates of frozen conditions on your site; and

d. Any inspection or maintenance checklists or other forms that will be used.

e. for each storm water control measure you must describe the strategy and schedule you plan to employ to maintain storm water control measures in effective operating condition for each precipitation event or you will be expected to replace, repair, and/or maintain problems found with storm water control measures immediately after each inspection.

7.2.12. **Staff Training**. The SWPPP must include documentation that the required personnel were trained in accordance with Part 6, and all other relevant training be documented (including training in Section 2 for projects that use treatment chemicals).

7.2.13. **UIC Class 5 Injection Wells.**

a. **Utah Water Quality Act Underground Injection Control (UIC) Program Requirements for Certain Subsurface Storm Water Controls**. If you are using any of the following storm water controls at your site, as they are described below, you must document any contact you have had with DWQ for implementing the requirements for underground injection wells in the Safe Drinking Water Act and DEQ's implementing regulations at UAC R317-7. In addition there may be local requirements related to such structures. Such controls (below) would generally be considered Class V UIC wells and all UIC Class V wells must be reported to DWQ for an inventory:

i. French drains (if storm water is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);

ii. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate storm water flow; and

iii. Drywells, seepage pits, or improved sinkholes (if storm water is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

Note: *For the State UIC Contact at DWQ call 801-536-4300.*

7.2.14. List of Impaired Waters that Receive a Discharge and the following information (see paragraph 3.2.1):

a. A list of all impaired waters to which you discharge;

b. The pollutant(s) for which the surface water is impaired; and

c. Whether a TMDL has been approved or established for the waters to which you discharge.

7.2.15. **SWPPP Certification**. The owner/operator must sign and date your SWPPP in accordance with Appendix G, Part G.16.1.2 & 1.3.

7.2.16. **Also Included in the SWPPP**. Once you have completed the submission of your on-line NOI (or paper submission for some), you must include the following documents as part of your SWPPP:

a. A copy of your NOI,

b. A copy of this permit (an electronic copy easily available to the storm water team is also acceptable).

7.3. **ON-SITE AVAILABILITY OF YOUR SWPPP.**
You are required to maintain a current copy of the project SWPPP at every active construction site where this permit is required, and where construction workers and construction activity related to the project is occurring. The SW Team and/or site workers must be able to refer to SWPPP and update it as needed to manage the site according to permit requirements and as outlined in the SWPPP (it is not required that the SWPPP be on the site when construction workers leave for the day or when there is no activity occurring on the site, but at all times there must be posted contact information where the SWPPP can be obtained – see paragraph 1.5). The SWPPP must be available within 30 minutes[24] at the request of DWQ, MS4, or EPA inspectors during random inspections at active sites , or immediately for pre-scheduled inspections. Requests for a copy of the SWPPP by a regulatory authority (DWQ, EPA, or an MS4), must be accommodated within 72 hours, or as agreed upon by the permittee and the regulatory authority at the time. DWQ may provide access to portions of the project SWPPP to a member of the public upon request. Confidential Business Information (CBI) may be withheld from the public, but may not be withheld from DWQ, local regulating MS4, or the EPA.

Note: *Information covered by a claim of confidentiality will be disclosed by DWQ only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim maybe disclosed to other employees, officers, or authorized representatives of DWQ and/or the EPA. The authorized*

[24] On several occasions for smaller projects it has been noted that the location of site plans happens to be the project manager's vehicle. On larger sites the SWPPP may be in another location not close to the place a permitting authority may appear. Thirty minutes is provided for the case where a permitting authority shows up for an inspection and the SWPPP is on the site a distance from that exact location, or it is with the project manager who has recently left the site for a business reason, inadvertently taking the site plans (including the SWPPP) with him/her. This time allowance is for notification of the person who may have taken the SWPPP, so it can be returned, or to locate the SWPPP on the site and provide it for the permitting authority. It is intended that SWPPPs be maintained at the site when the site is active. The 30-minutes is not for retrieving the SWPPP from another site where it should not be.

representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations. If an onsite location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4. REQUIRED SWPPP MODIFICATIONS.

7.4.1. **List of Conditions Requiring SWPPP Modification**. You must modify your SWPPP, including the site map(s), in response to any of the following conditions:

a. Whenever you make changes to your construction plans, storm water control measures, pollution prevention measures, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5;

b. To reflect areas on your site map where operational control has been transferred due to new ownership or a new operator (and the date of that transfer) since initiating permit coverage;

c. If inspections or investigations by site staff, the MS4, DWQ, or the EPA determine that SWPPP modifications are necessary for compliance with this permit;

d. Where DWQ, the EPA, or the MS4 determines it is necessary to impose additional requirements on your discharge, the following must be included in your SWPPP:

i. A copy of any correspondence describing such requirements; and

ii. A description of the storm water control measures that will be used to meet such requirements.

e. To reflect any revisions to applicable federal, state, or local requirements that affect the storm water control measures implemented at the site; and

f. If applicable, if a change in chemical treatment systems or chemically enhanced storm water control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

7.4.2. **Deadlines for SWPPP Modifications**. You must complete required revisions to the SWPPP within 7 calendar days following the occurrence of any of the conditions listed in Part 7.4.1.

7.4.3. **SWPPP Modification Records**. You are required to maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.15 above – this person can be a duly authorized representative as allowed in Appendix G.16.1.2, but should be a member of the storm water team) and a brief summary of all changes.

Note: *In most cases the date the modification was made with the initials of the person making the change is adequate.*

7.4.4. **Certification Requirements**. All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix G, Part G.16.1.2.

8. HOW TO TERMINATE COVERAGE.

Until your permit coverage is terminate, you are required to comply with all conditions and effluent limitations in the permit, except that inspections can be suspended if the site has been prepared to meet the stabilization requirements found in Section 2.2. To begin the termination process, you must go to the DWQ on-line Storm Water data base and complete the steps for terminating your permit, or you must submit a complete and accurate Notice of Termination (NOT) form (that can be downloaded from the construction storm water web page for DWQ) to the DWQ and the MS4 (for all MS4s listed in Appendix E, you must submit a paper form to the MS4), which certifies that you have met the requirements for termination in Part 8. At this point the permit status changes to "unconfirmed termination". The termination process is complete when DWQ or the MS4 (of jurisdiction) does a final inspection and the inspection is passed. At this point the status of the permit changes to "confirmed termination" and the permit is fully terminated.

8.1. MINIMUM INFORMATION REQUIRED IN NOT.

You will be required to provide the following in your NOT:

8.1.1. UPDES permit tracking number provided by the DWQ when you received coverage under this permit;

8.1.2. You must indicate if the termination request is:

a. **Partial Site** – If the termination request is for a portion of the total area, on area that is no longer under your ownership, you and the new owner are required to submit an Ownership Transfer Form found in Appendix M, to DWQ (and the MS4 if a regulated MS4, see Appendix E). For a partial termination you must indicate (on the NOT) how many acres (to the hundredths) that will be eliminated as a result of the transfer transaction, and you must describe (in words) the area that will be transferred. A partial termination submission does not result in a change of the permit status (the remaining area is still under your permit tracking number with an active status);

b. **Full Site** -- if the termination request is the entire area, it must be handled as follows:

i. **New Ownership**. A transfer of the entire site to a different owner. For this case you and the new owner are required to submit an Ownership Transfer Form found in Appendix M, to DWQ (and the MS4 if a regulated MS4, see Appendix E). The permit status will be changed from "active" to "unconfirmed termination". DWQ or the MS4 of jurisdiction will change the permit status to "confirmed termination" after an inspection. Another way to transfer is described on the Ownership Transfer Form.

ii. **Project Completion**. The project is completed and stabilized according to section 2.2. The status of the project will change from "active" to "unconfirmed termination" which will change to "confirmed termination" after a final inspection by DWQ or the local MS4 has approve the termination in a final inspection.

8.1.3. Basis for submission of the NOT (see Part 8.2);

8.1.4. Owner/Operator contact information;

8.1.5. Name of project and address (or a description of location if no street address is available); and

8.1.6. NOT certification, and signature (in accordance with Appendix G, G.16.1.1 & 1.3).

8.2. **CONDITIONS FOR TERMINATING PERMIT COVERAGE.**
You must terminate permit coverage if one of the following conditions occurs at your site (either 8.2.1, 8.2.2, or 8.2.3 below):

8.2.1. You have completed all earth-disturbing activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.3.3), and you have met the following requirements:

a. For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2;

b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;

c. You have removed all storm water controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable to assist in areas where re-establishment of vegetation is especially difficult; and

d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; and

e. If within a regulated MS4 (see appendix E), you have notified the MS4 that the site is ready for a final inspection; or

8.2.2. For the entire site or for a part of the site, if ownership changes the portion of the site that changes ownership must be terminated.

a. If ownership changes for the entire site the party selling the site must terminate coverage (see paragraph 8.1.2).

b. If ownership changes for a portion of the site the permit holder must terminate only the portion of the site that changes ownership (see paragraph 8.1.2).

8.2.3. Completed homes that are occupied by home owners where at least temporary sediment and erosion controls are in place are allowed to be terminated without final stabilization. If a home owner buys a newly completed house the permit can be terminated while the property is being transferred to the home owner. The home owner should not be involved in the permit process. If a home owner builds his/her

house, they must terminate the permit when the house is approved for occupancy where temporary storm water controls are in place on the site.

8.2.4. Coverage under an individual or alternative general UPDES permit has been obtained.

8.3. **FINAL INSPECTION ASSOCIATED WITH TERMINATION.**
After submission of an NOT, for most cases, there will be a final inspection by the permitting authority (DWQ or the MS4 with jurisdictional authority for the area). A NOT is not complete until the permitting authority approves the site for termination unless the permitting authority does not perform the inspection within a year of the submission of the NOT after it was submitted.

8.4. **HOW TO SUBMIT YOUR NOT.**

8.4.1. It is preferred that the DWQ "on-line" NOI system be used to submit an electronic NOT.

Access to the DWQ on-line storm water data base is found at the DWQ webpage at http://www.waterquality.utah.gov/UPDES/stormwatercon.htm. A click on Online Application Process and Search for Existing Permits found on that page will take you to the "on line" storm water data base where NOIs and NOTs are submitted. You must logon to the account created when the NOI was submitted and find the terminate (or NOT) button for the permit tracking number when you wish to terminate a coverage. In the case where the permittee does not have access to the account where the NOI was submitted the permittee must either contact DWQ and request account access or fill out and submit to DWQ a paper form of the NOT which can be downloaded from the same DWQ website.

8.5. **DEADLINE FOR SUBMITTING NOT.**
You must submit an NOT within 30 calendar days after any one of the triggering conditions in Part 8.2 occur.

8.6. **EFFECTIVE DATE OF TERMINATION OF COVERAGE.**
Your authorization to discharge under this permit terminates at midnight of the calendar day that a completed NOT is processed (meaning that storm water discharged from the site is not coming from a site involved with construction activity) on the DWQ "on-line" storm water data base, unless the results of the final inspection indicate problems that need addressing.

Appendix A - Definitions and Acronyms

Definitions

"Act" – is a reference to the Utah Water Quality Act, or Utah Code Annotated Title 19, Chapter 5.

"Agricultural Land" - cropland, grassland, rangeland, pasture, and other agricultural land, on which agricultural and forest-related products or livestock are produced and resource concerns may be addressed. Agricultural lands include cropped woodland, marshes, incidental areas included in the agricultural operation, and other types of agricultural land used for the production of livestock.

"Antidegradation Policy" or "Antidegradation Requirements" - the water quality standards regulation that requires maintenance of water quality:

> Waters whose existing quality is better than the established standards for the designated uses will be maintained at high quality unless it is determined by the Board, after appropriate intergovernmental coordination and public participation in concert with the Utah continuing planning process, allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. However, existing instream water uses shall be maintained and protected. No water quality degradation is allowable which would interfere with or become injurious to existing instream water uses.
>
> In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 316 of the Federal Clean Water Act.

Category 1 Waters: Waters which have been determined by the Board to be of exceptional recreational or ecological significance or have been determined to be a State or National resource requiring protection, shall be maintained at existing high quality through designation, by the Board after public hearing, as Category 1 Waters. New point source discharges of wastewater, treated or otherwise, are prohibited in such segments after the effective date of designation. Protection of such segments from pathogens in diffuse, underground sources is covered in R317-5 and R317-7 and the Regulations for Individual Wastewater Disposal Systems (R317-501 through R317-515). Other diffuse sources (nonpoint sources) of wastes shall be controlled to the extent feasible through implementation of best management practices or regulatory programs.

Discharges may be allowed where pollution will be temporary and limited after consideration of the factors in R317-2-3.5.b.4., and where best management practices will be employed to minimize pollution effects.

Waters of the state designated as Category 1 Waters are listed in UAC R317-2-12.1.

Category 2 Waters: Category 2 Waters are designated surface water segments which are treated as Category 1 Waters except that a point source discharge may be permitted provided that the discharge does not degrade existing water quality. Discharges may be allowed where pollution will be temporary and limited after consideration of the factors in UAC R317-2-3.5.b.4., and where best management practices will be employed to

minimize pollution effects. Waters of the state designated as Category 2 Waters are listed in UAC R317-2-12.2.

Category 3 Waters: For all other waters of the state, point source discharges are allowed and degradation may occur, pursuant to the conditions and review procedures outlined in in the paragraph below (Antidegradation Review).

Antidegradation Review (ADR): An antidegradation review will determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected.

An antidegradation review (ADR) may consist of two parts or levels. A Level I review is conducted to insure that existing uses will be maintained and protected.

Both Level I and Level II reviews will be conducted on a parameter-by-parameter basis. A decision to move to a Level II review for one parameter does not require a Level II review for other parameters. Discussion of parameters of concern is those expected to be affected by the proposed activity.

Antidegradation reviews shall include opportunities for public participation, as described in UAC R317-2-3.5e.

"Arid Areas" – areas with an average annual rainfall of 0 to 10 inches.

"Bank" (e.g., stream bank or river bank) – the rising ground bordering the channel of a water of the State of Utah.

"Bluff" – a steep headland, promontory, riverbank, or cliff.

"Borrow Areas" – the areas where materials are dug for use as fill, either onsite or off-site.

"Bypass" – the intentional diversion of waste streams from any portion of a treatment facility. See 40 CFR 122.41(m)(1)(i).

"Category 1, 2, and/or 3 Waters" – see "Antidegradation Policy" or "Antidegradation Requirements".

"Cationic Treatment Chemical" – polymers, flocculants, or other chemicals that contain an overall positive charge. Among other things, they are used to reduce turbidity in storm water discharges by chemically bonding to the overall negative charge of suspended silts and other soil materials and causing them to bind together and settle out. Common examples of cationic treatment chemicals are chitosan and cationic PAM.

"Commencement of Earth-Disturbing Activities" - the initial disturbance of soils (or 'breaking ground') associated with clearing, grading, or excavating activities or other construction-related activities (e.g., stockpiling of fill material).

"Commencement of Pollutant-Generating Activities" – at construction sites (for the purposes of this permit) occurs in any of the following circumstances:

- Clearing, grubbing, grading, and excavation has begun;

- Raw materials related to your construction activity, such as building materials or products, landscape materials, fertilizers, pesticides, herbicides, detergents, fuels, oils, or other chemicals have been placed at your site;

- Use of authorized non-storm water for washout activities, or dewatering activities, have begun; or

- Any other activity has begun that causes the generation of or the potential generation of pollutants.

"Common Plan of Development or Sale" – is a plan to subdivide a parcel of land into separate parts for separate sale. This can be for a residential, commercial, or industrial development. The plan originates as a single parcel which is separated into parts. This usually goes through an approval process by a local governmental unit, but in some cases may not require that process. The original plan is considered the "common plan of development or sale" whether phased or completed in steps. If a further plan is conceived that was not foreseen during the original plan, or the original plan is added onto but the addition was conceived later and was not included in any part of the original plan concept and/or development, and it develops after the completion of the construction of the entire original plan, it would be a separate "common plan of development or sale". More than one owner of developable land can purposely join together and develop a single common plan of development or sale, but without a determined effort and coordinated planning, land owned by different owners would not be considered part of a single common plan of development or sale. For UPDES storm water permit purposes a common plan must have been initiated after October, 1992. A common plan of development or sale remains so until each lot or section of the development has fulfilled its planned purposes (e.g. in a residential development as homes are completed, stabilized, and sold or occupied). As lots or separated sections of the development are completed, the lot or section is stabilized, and the plan purposes are fulfilled for that area, lot, or section; it is no longer part of the common plan of development or sale (e.g. if a home is sold in a development and the owner decides to add a garage somewhere on the lot, that garage project is not part of the common plan of development or sale. In this process a common plan of development or sale may become reduced in size and/or separated by completed areas (which are no longer part of the common plan of development or sale), but all unfinished lots remain part of the same common plan development or sale until they are completed, stabilized, and fulfilled according to the purposes of the plan). Common Plans of Development or Sale can be commercial or industrial also.

"Construction Activities" – earth-disturbing activities, such as the clearing, grading, and excavation of land.

"Construction and Development Effluent Limitations and New Source Performance Standards" (C&D Rule) – as published in 40 CFR § 450 is the regulation requiring effluent limitations guidelines(ELG's) and new source performance standards (NSPS) for controlling the discharge of pollutants from construction sites.

"Construction Site" – the land or water area where construction activities will occur and where storm water controls will be installed and maintained. The construction site includes construction support activities, which may be located at a different part of the property from where the primary construction activity will take place, or on a different piece of property altogether. The construction site is often a smaller subset of the lot or parcel within which the project is taking place.

"Construction Support Activities" – a construction-related activity that specifically supports the construction activity and involves earth disturbance or pollutant-generating activities of its own, and can include activities associated with concrete or asphalt batch plants, equipment staging yards, materials storage areas, excavated material disposal areas, and borrow areas.

"Construction Waste" – discarded material (such as packaging materials, scrap construction materials, masonry products, timber, steel, pipe, and electrical cuttings, plastics, and styrofoam).

"Conveyance Channel" – a temporary or permanent waterway designed and installed to safely convey storm water flow within and out of a construction site.

"Corrective Action" – for the purposes of the permit, any action taken to (1) repair, modify, or replace any storm water control used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; and (3) remedy a permit violation.

"CWA" – the Clean Water Act or the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.

"Dewatering" – the act of draining rainwater and/or groundwater from building foundations, vaults, and trenches.

"Director" – the director of the Division of Water Quality.

"Discharge" – it can mean discharge of storm water or "discharge of a pollutant."

"Discharge of a Pollutant" – any addition of any "pollutant" or combination of pollutants to "waters of the State" from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the State. This includes additions of pollutants into waters of the State from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. See 40 CFR 122.2.

"Discharge Point" – for the purposes of this permit, the location where collected and concentrated storm water flows are discharged from the construction site.

"Discharge-Related Activity" – activities that cause, contribute to, or result in storm water and allowable non-storm water point source discharges, and measures such as the siting, construction, and operation of storm water controls to control, reduce, or prevent pollutants from being discharged.

"Discharge to an Impaired Water" – for the purposes of this permit, a discharge to an impaired water occurs if the first water of the State to which you discharge is identified by DWQ or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting an applicable water quality standard, or is included in an EPA-approved or DWQ established total maximum daily load (TMDL). For discharges that enter a storm sewer system prior to discharge, the water of the State to which you discharge is the first water of the State that receives the storm water discharge from the storm sewer system.

"Domestic Waste" – for the purposes of this permit, typical household trash, garbage or rubbish items generated by construction activities.

"Drainageway" – an open linear depression, whether constructed or natural, that functions for the collection and drainage of surface water.

"Drought-Stricken Area" – for the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period during which the construction will occur that any of the following conditions are likely: (1) "Drought to persist or intensify", (2) "Drought ongoing, some improvement", (3) "Drought likely to improve, impacts ease", or (4) "Drought development likely". See http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif.

"Earth-Disturbing Activity" or "Land-Disturbing Activity" – actions taken to alter the existing vegetation and/or underlying soil of a site, such as clearing, grading, site preparation (e.g., excavating, cutting, and filling), soil compaction, and movement and stockpiling of top soils.

"Effective Operating Condition" – for the purposes of this permit, a storm water control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

"Effluent Limitations" – for the purposes of this permit, any of the Part 2 or Part 3 requirements.

"Effluent Limitations Guideline" (ELG) – defined in 40 CFR § 122.2 as a regulation published by the EPA Administrator under section 304(b) of CWA to adopt or revise effluent limitations.

"Electronic Notice of Intent" – DWQ's online system for submitting electronic Construction General Permit forms.

"Eligible" – for the purposes of this permit, refers to storm water and allowable non-storm water discharges that are authorized for coverage under this general permit.

"Emergency-Related Project" – a project initiated in response to a public emergency (e.g., natural disaster, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services.

"Excursion" – a measured value that exceeds a specified limit.

"Existing Project" – a construction project that commenced construction activities prior to the issuance date of this permit.

"Existing Permit Coverage" – means for a permittee that he/she had permit coverage under a previous permit (e.g., UTR300000), prior to the issuance of this permit.

"Exit Points" – any points of egress from the construction site to be used by vehicles and equipment during construction activities.

"Exposed Soils" – for the purposes of this permit, soils that as a result of earth-disturbing activities are disturbed and exposed to the elements of weather.

"Final Stabilization" – on areas not covered by permanent structures, either (1) vegetation has been established, or for arid or semi-arid areas, the area has been designed and prepared so that with time it is expected to be established a uniform (e.g., evenly distributed, without large bare

areas) perennial vegetative cover of 70 percent of the natural background vegetative cover, or (2) non-vegetative stabilization methods have been implemented to provide effective cover for exposed portions of the site.

"Groundwater" – water that resides in the ground, even if only temporarily for the time it is in the ground, in the voids and interstitial spaces around soil particles.

"Hazardous Materials" or "Hazardous Substances" or "Hazardous or Toxic Waste" – for the purposes of this permit, any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. See also 40 CFR §261.2.

"Impaired Water" or "Water Quality Impaired Water" or "Water Quality Limited Segment" – for the purposes of this permit, waters identified as impaired on the CWA Section 303(d) list, or waters with an EPA-approved or established TMDL. Your construction site will be considered to discharge to an impaired water if the first water of the state to which you discharge is identified by DWQ pursuant to Section 303(d) of the CWA as not meeting an applicable water quality standard, or is included in an EPA-approved or DWQ established total maximum daily load (TMDL). For discharges that enter a storm sewer system prior to discharge, the first water of the state to which you discharge is the water body that receives the storm water discharge from the storm sewer system.

"Impervious Surface" – for the purpose of this permit, any land surface with a low or no capacity for soil infiltration including, but not limited to, pavement, sidewalks, parking areas and driveways, packed gravel or soil, or rooftops.

"Indian Country" or "Indian Country Lands" – defined at 40 CFR §122.2 as:

1. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of way running through the reservation;

2. All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof; and

3. All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-ways running through the same.

"Infeasible" – for the purpose of this permit, infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices. DWQ notes that it does not intend for any permit requirement to conflict with state water rights law.

"Install" or "Installation" – when used in connection with storm water controls, to connect or set in position storm water controls to make them operational.

"Intermittent (or Seasonal) Stream" – one which flows at certain times of the year when groundwater provides water for stream flow, as well as during and immediately after some precipitation events or snowmelt.

"Jar test" – a test designed to simulate full-scale coagulation/flocculation/sedimentation water treatment processes by taking into account the possible conditions.

"Landward" – positioned or located away from a water body, and towards the land.

"Level Spreader" – a temporary storm water control used to spread storm water flow uniformly over the ground surface as sheet flow to prevent concentrated, erosive flows from occurring.

"Linear Construction Project" – includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area.

"Minimize" – to reduce and/or eliminate to the extent achievable using storm water controls that are technologically available and economically practicable and achievable in light of best industry practices.

"Municipal Separate Storm Sewer System" or "MS4" – defined at 40 CFR §122.26(b)(8) as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

1. Owned and operated by a state, city, town, county, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the State;

2. Designed or used for collecting or conveying storm water;

3. Which is not a combined sewer; and

4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

"National Pollutant Discharge Elimination System" (NPDES) – defined at 40 CFR §122.2 as the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of CWA. The term includes an 'approved program.'

"Native Topsoil" – the uppermost layer of naturally occurring soil for a particular area, and is often rich in organic matter, biological activity, and nutrients.

"Native Vegetation" – the species of plants that have developed for a particular region or ecosystem and are considered endemic to that region or ecosystem.

"Natural Buffer" – for the purposes of this permit, an area of undisturbed natural cover surrounding surface waters within which construction activities are restricted. Natural cover includes the vegetation, exposed rock, or barren ground that exists prior to commencement of earth-disturbing activities.

"Natural Vegetation" – vegetation that occurs spontaneously without regular management, maintenance or species introductions, removals, and that generally has a strong component of native species.

"New Operator of a New or Existing Project" – an operator that through transfer and/or operation replaces the operator of an already permitted construction project.

"New Project" – a construction project that commences construction activities on or after July 1, 2013.

"New Source" – for the purpose of this permit, a construction project that commenced construction activities on or after the issuance date of this permit.

"New Source Performance Standards (NSPS)" – for the purposes of this permit, NSPS are technology-based standards that apply to construction sites that are new sources under 40 CFR 450.24.

"Non-Storm Water Discharges" – discharges that do not originate from storm events. They can include, but are not limited to, discharges of process water, air conditioner condensate, noncontact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, or pipe testing water.

"Non-Turbid" – is a term used in this permit to describe water that appears visually clear and there appears to be no evidence of silt or sediment present in the water.

"Notice of Intent" (NOI) – the form (electronic or paper) required for authorization of coverage under the Construction General Permit.

"Notice of Termination" (NOT) – the form (electronic or paper) required for terminating coverage under the Construction General Permit.

"Operational" – for the purpose of this permit, storm water controls are made "operational" when they have been installed and implemented, are functioning as designed, and are properly maintained.

"Operator" – for the purpose of this permit an operator is the party that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the permit). Operator in this context is generally is considered to be the general contractor for a project.

"Ordinary High Water Mark" – the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris.

"Outfall" – see "Discharge Point."

"Owner" – for the purpose of this permit an owner usually has ownership of property on which construction activity is taking place, but it also includes ownership of a project for which construction activity is occurring on property that is owned or leased. An owner is the party that has ultimate control over construction plans and specifications, including the ability at the highest level to make modifications to those plans and specifications. "Owner" in this context is the party that has ultimate control over the destiny of a project.

"Permittee" – is the owner and/or operator named in the NOI for the project.

"Permitting Authority" – for the purposes of this permit, DWQ, the Executive Secretary for the Utah Water Quality Board, or an authorized representative.

"Point(s) of Discharge" – see "Discharge Point."

"Point Source" – any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Pollutant" – defined at 40 CFR §122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

"Pollutant-Generating Activities" – at construction sites (for the purposes of this permit), those activities that lead to or could lead to the generation of pollutants, either as a result of earth disturbance or a related support activity. Some of the types of pollutants that are typically found at construction sites are:

- sediment;
- nutrients;
- heavy metals;
- pesticides and herbicides;
- oil and grease;
- bacteria and viruses;
- trash, debris, and solids;
- treatment polymers; and
- any other toxic chemicals.

"Pollution Prevention Measures" – storm water controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

"Polymers" – for the purposes of this permit, coagulants and flocculants used to control erosion on soil or to enhance the sediment removal capabilities of sediment traps or basins. Common construction site polymers include polyacrylamide (PAM), chitosan, alum, polyaluminum chloride, and gypsum.

"Prohibited Discharges" – discharges that are not allowed under this permit, including:

1. Wastewater from washout of concrete;
2. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
3. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
4. Soaps or solvents used in vehicle and equipment washing;
5. Toxic or hazardous substances from a spill or other release; and

6. Waste, garbage, floatable debris, construction debris, and sanitary waste from pollutant generating activities.

"Provisionally Covered Under this Permit" – for the purposes of this permit, DWQ provides temporary coverage under this permit for emergency-related projects prior to receipt of a complete and accurate NOI. Discharges from earth-disturbing activities associated with the emergency-related projects are subject to the terms and conditions of the permit during the period of temporary coverage.

"Receiving Water" – a "Water of the State" is as defined in Utah Administrative Code R317-1-1.34, into which the regulated storm water discharges.

"Regulatory Authority" – as it pertains to this permit means EPA, DWQ, or a local MS4 that oversights construction activity.

"Run-On" – sources of storm water that drain from land located upslope or upstream from the regulated site in question.

"Semi-Arid Areas" – areas with an average annual rainfall of over 10 to 20 inches.

"Site" – for construction activities, the land or water area where earth-disturbing activities take place, including construction support activities.

"Small Construction Activity" – defined at Utah Administrative Code R317-8-3.9(6)(e)1. and incorporated here by reference. A small construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site.

"Small Residential Lot" – for the purpose of this permit, a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

"Snowmelt" – the conversion of snow into overland storm water and groundwater flow as a result of warmer temperatures.

"Spill" – for the purpose of this permit, the release of a hazardous or toxic substance from its container or containment.

"Stabilization" – the use of vegetative and/or non-vegetative cover to prevent erosion and sediment loss in areas of disturbed soil exposed from the construction process.

"Steep Slopes" –for this permit steep slopes are defined as those that are 15 percent or greater in grade.

"Storm Sewer System" – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) designed or used for collecting or conveying storm water.

"Storm Water" – storm water runoff, snow melt runoff, and surface runoff and drainage.

"Storm Water Control Measure" - refers to any storm water control, BMP, or other method (including narrative effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the state.

"Storm Water Controls" – see "Storm Water Control measure."

"Storm Water Discharge Associated with Construction Activity" – as used in this permit, a discharge of pollutants in storm water to waters of the state from areas where land disturbing activities (e.g., clearing, grading, or excavation) occur, or where construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck chute wash down, fueling), or other industrial storm water directly related to the construction process (e.g., concrete or asphalt batch plants), are located.

"Storm Water Inlet" – an entrance or opening to a storm water conveyance system, generally placed below grade so as to receive storm water drainage from the surrounding area.

"Storm Water Team" – the group of individuals responsible for oversight of the development and modifications of the SWPPP, and oversight of compliance with the permit requirements. The individuals on the "Storm water Team" must be identified in the SWPPP.

"Storm Event" – a precipitation event that results in a measurable amount of precipitation.

"Storm Sewer" – a system of pipes (separate from sanitary sewers) that carries storm water runoff from buildings and land surfaces.

"Subcontractor" – for the purposes of this permit, an individual or company that takes a portion of a contract from the general contractor or from another subcontractor.

"Surface Water" – for this permit a surface water is defined all open water bodies, streams, lakes, ponds, marshes, wetlands, watercourses, waterways, springs, drainage systems, and all other bodies or accumulations of water on the surface only. Surface water is visible water, standing or flowing, above the surface of the ground.

"SWPPP" (Storm water Pollution Prevention Plan) – a site-specific, written document that, among other things: (1) identifies potential sources of storm water pollution at the construction site; (2) describes storm water control measures to reduce or eliminate pollutants in storm water discharges from the construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of this general permit.

"Temporary Stabilization" – a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

"Thawing Conditions" – for the purposes of this permit, thawing conditions are expected based on the historical likelihood of two or more days with daytime temperatures greater than 32˚F. This date can be determined by looking at historical weather data.

Note: *The estimation of thawing conditions is for planning purposes only. During construction the permittee will be required to conduct site inspections based upon actual conditions (i.e., if thawing conditions occur sooner than expected, the permittee will be required to conduct inspections at the regular frequency).*

"Total Maximum Daily Load" or "TMDL" – the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure.

"Toxic Waste" – see "Hazardous Materials."

"Turbidity" – when the term is used in a narrative it means a condition of water quality characterized by the presence of cloudiness usually caused by suspended solids and/or organic material. It refers to the visual clarity in water and is measured in a test passing light through a sample of water and quantifying the amount of light passing. The measurement is <u>not</u> directly proportional to the quantity of sediment in the water sample it is directly related to the quantity of light that passes through the sample. Particulate size and other factors can affect the amount of light that passes through the sample. This measurement is called nephelometric turbidity units or ntu.

"Uncontaminated Discharge" – a discharge that does not cause or contribute to an exceedence of applicable water quality standards.

"Upland" - the dry land area above and 'landward' of the ordinary high water mark.

"Upset" – Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond your reasonable control. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR 122.41(n)(1).

"Water-Dependent Structures" – structures or facilities that are required to be located directly adjacent to a waterbody or wetland, such as a marina, pier, boat ramp, etc.

"Water Quality Standards" –are provisions of State law which consist of a designated use or uses for the waters of the United States, water quality criteria for such waters based upon such uses, and an antidegradation policy to protect highquality waters. Water quality standards protect the public health or welfare, enhance the quality of water and serve the purposes of the Utah Water Quality Act.

"Waters of the State" – means all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof, except that bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife, shall not be considered to be "waters of the state" under this definition (Section 19-5-102).

"Wetland" – those areas that are inundated or saturated by surface 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. Wetlands generally include swamps, marshes, bogs, and similar areas. On-site evaluations are typically required to confirm the presence and boundaries of wetlands.

"Work day" – for the purposes of this permit, a work day is a calendar day on which construction activities will take place.

Acronyms
C&D – Construction & Development
CGP – Construction General Permit
CFR – Code of Federal Regulations
CPoD – Common Plan of Development or Sale
CWA – Clean Water Act
DEQ – Department of Environmental Quality
DDW – Division of Drinking Water
DWQ – Division of Water Quality
DNR – Department of Natural Resources
DOGM – Department of Oil, Gas, and Mining
EPA – United States Environmental Protection Agency
ESA – Endangered Species Act
FWS – United States Fish and Wildlife Service
MS4 – Municipal Separate Storm Sewer System
MSGP – Multi-Sector General Permit
NHPA – National Historic Preservation Act
NMFS – United States National Marine Fisheries Service
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
NRC – National Response Center
NRCS – National Resources Conservation Service
POTW – Publicly Owned Treatment Works
SPCC – Spill Prevention Control and Countermeasure
SW – Storm Water
SWMP – Storm Water Management Plan
SWPPP – Storm Water Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UAC – Utah Administrative Code
UCA – Utah Code Annotated
UCGP – Utah Construction General Permit
UDOT – Utah Department of Transportation
USGS – United States Geological Survey
UWQA – Utah Water Quality Act
WQS – Water Quality Standard

Appendix B - Small Construction Waivers and Instructions

These waivers are only available to storm water discharges associated with small construction activities (i.e., construction activity disturbing between 1-5 acres). As the owner/operator of a small construction activity, you may be able to qualify for a waiver in lieu of needing to obtain coverage under this general permit based on a low rainfall erosivity factor. Each owner/operator, otherwise needing permit coverage, must notify DWQ of its intention to employ this waiver. It is the responsibility of those individuals wishing to obtain a waiver from coverage under this general permit to submit a complete and accurate waiver certification as described below. Where the owner/operator changes or another is added during the construction project, the new owner/operator must also submit a waiver certification to be waived.

B.1 RAINFALL EROSIVITY WAIVER

Under this scenario the small construction project's rainfall erosivity factor calculation ("R" in the Revised Universal Soil Loss Equation) is less than 5 during the period of construction activity. The owner/operator must certify to DWQ that construction activity will occur only when the rainfall erosivity factor is less than 5. The period of construction activity begins at initial earth disturbance and ends with final stabilization. Where vegetation will be used for final stabilization, the date of installation of a stabilization practice that will provide interim non-vegetative stabilization can be used for the end of the construction period, provided the owner/operator commits (as a condition of waiver eligibility) to periodically inspect and properly maintain the area until the criteria for final stabilization as defined in the construction general permit have been met. If use of this interim stabilization eligibility condition was relied on to qualify for the waiver, signature on the waiver with its certification statement constitutes acceptance of and commitment to complete the final stabilization process. The owner/operator must submit a waiver certification to DWQ prior to commencing construction activities.

Note: *The rainfall erosivity factor "R" is determined in accordance with Chapter 2 of Agriculture Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE), pages 21–64, dated January 1997; United States Department of Agriculture (USDA), Agricultural Research Service.*

EPA has developed an online rainfall erosivity calculator to help small construction sites determine potential eligibility for the rainfall erosivity waiver. You can access the calculator from EPA's website at:www.epa.gov/npdes/stormwater/lew. The R factor can easily be calculated by using the construction site latitude/longitude or address and estimated start and end dates of construction. This calculator may also be useful in determining the time periods during which construction activity could be waived from permit coverage. You may find that moving your construction activity by a few weeks or expediting site stabilization will allow you to qualify for the waiver. Use this online calculator or the Construction Rainfall Erosivity Waiver Fact Sheet (www.epa.gov/npdes/pubs/fact3-1.pdf) to assist in determining the R Factor for your small construction site.

If you are the owner/operator of the construction activity and are eligible for a waiver based on low erosivity potential, you can submit the erosivity waiver electronically on the DWQ on-line Storm Water data base (https://secure.utah.gov/stormwater) or provide the following information on the waiver certification form in order to be waived from permitting requirements:

1. Name, address and telephone number of the construction site owner/operator(s);

2. Name (or other identifier), address, county, city (if within an incorporated city boundary), and latitude/longitude of the construction project or site;
3. Estimated construction start and completion (i.e., final stabilization) dates, and total acreage (to the nearest quarter acre) to be disturbed;
4. The rainfall erosivity factor calculation that applies to the active construction phase a your project site; and
5. A statement, signed and dated by an authorized representative as provided in Appendix I, Subsection I.11, which certifies that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five

You can access the waiver certification form from DWQ's website at: (http://www.waterquality.utah.gov/UPDES/stormwatercon.htm). Paper copies of the form must be sent to one of the addresses listed in Part B.2 of this appendix.

Note: *If the R factor is 5 or greater, you cannot apply for the rainfall erosivity waiver, and must apply for UPDES permit coverage.*

If your small construction project continues beyond the projected completion date given on the waiver certification, you must recalculate the rainfall erosivity factor for the new project duration. If the R factor is below five (5), you must update all applicable information on the waiver certification and retain a copy of the revised waiver as part of your records. The new waiver certification must be submitted prior to the projected completion date listed on the original waiver form to assure your exemption from permitting requirements is uninterrupted. If the new R factor is 5 or above, you must obtain UPDES permit coverage.

B.2 WAIVER DEADLINES AND SUBMISSIONS

1. Waiver certifications must be submitted prior to commencement of construction activities.
2. Late Notifications: Owner/Operators are not prohibited from submitting waiver certifications after initiating clearing, grading, excavation activities, or other construction activities. DWQ reserves the right to take enforcement for any unpermitted discharges that occur between the time construction commenced and waiver authorization is granted.

Submittal of a waiver certification is an optional alternative to obtaining permit coverage for discharges of storm water associated with small construction activity (construction activity disturbing 1-5 acres), provided you qualify for the waiver. Any discharge of storm water associated with small construction activity not covered by either a permit or a waiver may be considered an unpermitted discharge under the Clean Water Act. DWQ may notify any owner/operator covered by a waiver that they must apply for a permit. DWQ may notify any owner/operator who has been in non-compliance with a waiver that they may no longer use the waiver for future projects. Any member of the public may petition DWQ to take action under this provision by submitting written notice along with supporting justification. Complete and accurate Rainfall Erosivity waiver certifications not otherwise submitted electronically via DWQ's on-line Storm Water data base system (https://secure.utah.gov/stormwater) must be sent to the following address:

Construction Storm Water Waiver
Utah DWQ
PO Box 144870
Salt Lake City, Utah 84114-4870

Appendix C – List with Information on Utah's Waters

The site http://wq.deq.utah.gov/ has a map of watershed assessment units which can be used to identify waters (rivers, creeks, lakes) and water quality information about them. If you can find the place on the map of the State of Utah and click where your project will occur, information will come up in the window on the left about the watershed assessment unit.

The information available on the watershed assessment unit is:

Name of the watershed assessment unit or water body
Category of water
Beneficial uses of the water body
If the water is impaired
If impaired, what the cause of impairment is
A contact name and phone number to obtain more information.

Appendix D – Buffer Guidance.

The following section was taken (nearly verbatim) from the EPA CGP. The EPA covers the entire US and therefore provides information from across the US. Data and information directly about Utah are not included. DWQ does not have the resources to modify this appendix to generate and include information only for Utah. The entire section is included to provide direction and help for permittees although examples within this treatise may also include areas not similar to Utah. For purposes of the permit it will suffice for a site in Utah to use the data from areas with similar climates (Idaho or New Mexico -- whichever matches the Utah site closest) to make the prescribed calculations.

The purpose of this guidance is to assist you in complying with the requirements in Part 2.1.2.a. of the permit regarding the establishment of natural buffers or equivalent sediment controls. This guidance is organized as follows:

D.1. SITES THAT ARE REQUIRED TO COMPLY WITH PART 2.1.2.a. ····· D-2.

D.1.1. Step 1 - Determine if Your Site is Within 50 Feet of a Surface Water ····· D-2.
D.1.2. Step 2 - Determine if Any Exceptions to the Requirements in Part 2.1.2.a. Apply ··· D-3.

D.2 COMPLIANCE ALTERNATIVES GUIDANCE ····· D-4.

D.2.1. Guidance for Providing and Maintaining Natural Buffers ····· D-4.
D.2.1.1 Buffer Width Measurement ····· D-5.
D.2.1.2 Limits to Disturbance Within the Buffer. ····· D-7.
D.2.1.3 Discharges to the Buffer ····· D-7.
D.2.1.4 SWPPP Documentation ····· D-8.
D.2.2. Guidance for Providing the Equivalent Sediment Reduction as the 50-foot Buffer ··· D-8.
D.2.2.1 Determine Whether it is Feasible to Provide a Reduced Buffer ····· D-8.
D.2.2.2 Design Controls That Provide Equivalent Sediment Reduction as 50-foot Buffer ····· D-9.
a. Step 1 - Estimate the Sediment Reduction from the 50-foot Buffer D-10.
b. Step 2 - Design Controls That Match the Sediment Removal Efficiency of the 50-foot Buffer ····· D-11.
c. Step 3 - Document How Site-Specific Controls Will Achieve the Sediment Removal Efficiency of the 50-foot Buffer ····· D-12.
D.2.3 Small Residential Lot Compliance Alternatives ····· D-13.
D.2.3.1 Step 1 – Determine if You are Eligible for the Small Residential Lot Compliance ····· D-13.
D.2.3.2 Step 2 – Implement the Requirements of the Small Residential Lot Compliance Alternative Selected ····· D-13.
a. Small Residential Lot Compliance Alternative 1 ····· D-13.
b. Small Residential Lot Compliance Alternative 2 ····· D-14.

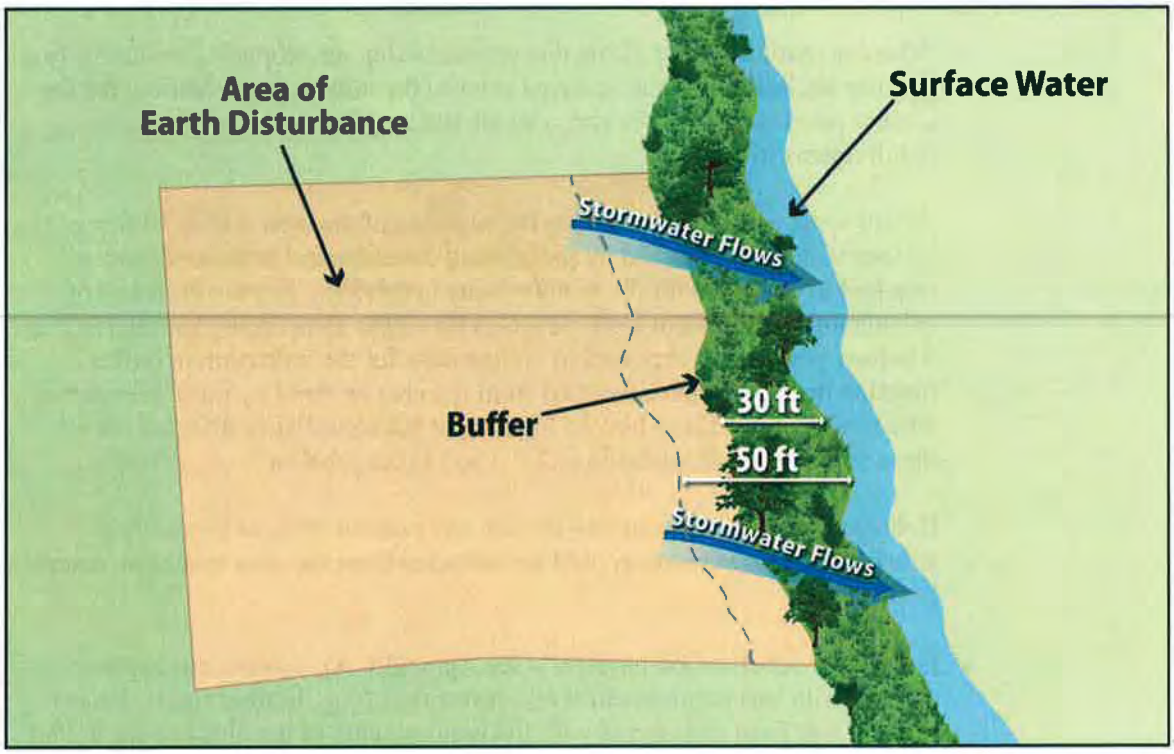
D.1 SITES THAT ARE REQUIRED TO COMPLY WITH PART 2.1.2.a.

The purpose of this part is to help you determine if the requirements in Part 2.1.2.a. apply to your site.

D.1.1 Step 1 - Determine if Your Site is Within 50 Feet of a Surface Water

Part 2.1.2.a. applies to you only if your earth-disturbing activities will occur within 50 feet of a surface water that receives storm water discharges from your site. Figure D – 1 illustrates when a site would be required to comply with the requirements in Part 2.1.2.a. due to their proximity to a surface water. If the surface water is not located within 50 feet of the earth-disturbing activities, Part 2.1.2.a. does not apply.

Figure D - 1. Example of earth-disturbing activities within 50 feet of a surface water.



If you determine that your earth-disturbing activities will occur within 50 feet of a surface water that receives storm water discharges from your site, the requirements in Part 2.1.2.a. apply, except for certain circumstances that are described in Step 2.

Note that where some natural buffer exists but portions of the area within 50 feet of the surface water are occupied by preexisting development disturbances, or if a portion of area within 50 feet of the surface water is owned by another party and is not under your control, the buffer requirements in Part 2.1.2.a. still apply, but with some allowances.

Clarity about how to implement the compliance alternatives for these situations is provided in D.2.1.2 and D.2.2.2 below.

Note that DWQ does not consider designed storm water control features (e.g., storm water conveyance channels, storm drain inlets, storm water basins) that direct storm water to surface waters more than 50 feet from the disturbance to constitute surface waters for the purposes of determining if the buffer requirements apply.

D.1.2 Step 2 - Determine if Any Exceptions to the Requirements in Part 2.1.2.a. Apply.

The following exceptions apply to the requirements in Part 2.1.2.a:

- If there is no discharge of storm water to surface waters through the area between the disturbed portions of the site and any surface waters located within 50 feet of your site, you are not required to comply with the requirements in this Part. This includes situations where you have implemented controls measures, such as a berm or other barrier that will prevent such discharges.

- Where no natural buffer exists due to preexisting development structures (e.g. parking lot, building) that occurred prior to the initiation of planning for the current development of the site, you are not required to comply with the requirements in this Part.

  Where some natural buffer exists but portions of the area within 50 feet of the surface water are occupied by preexisting development structures, you are required to comply with the requirements in this Part. For the purposes of calculating the sediment load reduction for either compliance alternative 2 or 3 below, you are not expected to compensate for the reduction in buffer function that would have resulted from the area covered by these preexisting structures. Clarity about how to implement the compliance alternatives for these situations is provided in D.2.1.2 and D.2.2.2 below.

  If during your project, you will disturb any portion of these preexisting structures, the area removed will be deducted from the area treated as natural buffer.

- For "linear construction projects" (see Appendix A), you are not required to comply with this requirement if site constraints (e.g., limited right-of-way) prevent you from complying with the requirements of the alternatives in Part 2.1.2.a.i. provided that, to the extent practicable, you limit disturbances within 50 feet of the surface water and/or you provide supplemental erosion and sediment controls to treat storm water discharges from earth disturbances within 50 feet of the surface water. You must also document in your SWPPP your rationale for why it is infeasible for you to comply with the requirements in Part 2.1.2.a.i., and describe any buffer width retained and/or supplemental erosion and sediment controls installed.

- For "small residential lot" construction (i.e., a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part of a common plan of development or sale that will disturb greater than or equal to 1 acre), you have the option of complying with the requirements in Part D.2.3 of this appendix.

- The following disturbances within 50 feet of a surface water are exempt from the requirements in this Part:
  - Construction approved under a CWA Section 404 permit; or
  - Construction of a water-dependent structure or water access areas (e.g., pier, boat ramp, trail).

  Note that you must document in your SWPPP if any disturbances related to any of the above exceptions occurs within the buffer area on your site.

D.2 COMPLIANCE ALTERNATIVES GUIDANCE.

If in Part D.1 of this guidance you determine that the buffer requirements apply to your site, you have three compliance alternatives from which you can choose:

1. Provide and maintain a 50-foot undisturbed natural buffer (Part 2.1.2.a.i.1));[1] or
2. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer (Part 2.1.2.a.i.2));[1] or
3. If it is infeasible to provide and maintain an undisturbed natural buffer of any size, you must implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer (Part 2.1.2.a.i.3)).[1]

The compliance alternative selected above must be maintained throughout the duration of permit coverage.

The following provides detailed guidance for how you can comply with each of the compliance alternatives. Part D.2.1. below provides guidance on how to provide and maintain natural buffers consistent with the alternatives 1 and 2, above. Part D.2.2. below provides guidance on how to comply with the requirement to provide a 50-foot buffer equivalent through erosion and sediment controls consistent with alternatives 2 and 3, above.

D.2.1 Guidance for Providing and Maintaining Natural Buffers.

The following guidance is intended to assist you in complying with the requirements to provide and maintain a natural buffer during construction. This part of the guidance

[1] For the compliance alternatives in 1 and 2, you are not required to enhance the quality of the vegetation that already exists in the buffer, or provide vegetation if none exists (e.g., arid and semi-arid areas). You only need to retain and protect from disturbance the natural buffer that existed prior to the commencement of construction. Any preexisting structures or impervious surfaces are allowed in the natural buffer provided you retain and protect from disturbance the natural buffer area outside the preexisting disturbance. Similarly, for alternatives 2 and 3, you are required to implement and maintain sediment controls that achieve the sediment load reduction equivalent to the undisturbed natural buffer that existed on the site prior to the commencement of construction. In determining equivalent sediment load reductions, you may consider naturally non-vegetated areas and prior disturbances. See Part D.2.2 of this Appendix for a discussion of how to determine equivalent reductions.

applies to you if you choose either alternative 1 (50-foot buffer) or alternative 2 (a buffer of < 50 feet supplemented by additional erosion and sediment controls that achieve the equivalent sediment load reduction as the 50-foot buffer), or if you are providing a buffer in compliance with one of the small residential lot compliance alternatives in Part D.2.3 below.

D.2.1.1 Buffer Width Measurement

Where you are retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:

1. The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or

2. The edge of the stream or river bank, bluff, or cliff, whichever is applicable.

Refer to Figure D – 2 and Figure D - 3. You may find that specifically measuring these points is challenging if the flow path of the surface water changes frequently, thereby causing the measurement line for the buffer to fluctuate continuously along the path of the waterbody. Where this is the case, EPA suggests that rather than measuring each change or deviation along the water's edge, it may be easier to select regular intervals from which to conduct your measurement. For instance, you may elect to conduct your buffer measurement every 5 to 10 feet along the length of the water.

Additionally, note that if earth-disturbing activities will take place on both sides of a surface water that flows through your site, to the extent that you are establishing a buffer around this water, it must be established on both sides. For example, if you choose alternative 1 above, and your project calls for disturbances on both sides of a small stream, you would need to retain the full 50 feet of buffer on both sides of the water. However, if your construction activities will only occur on one side of the stream, you would only need to retain the 50-foot buffer on the side of the stream where the earth disturbance will occur.

Figure D - 2. This image shows buffer measurement from the ordinary high water mark of the water body, as indicated by a clear natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, and/or the presence of litter/debris.

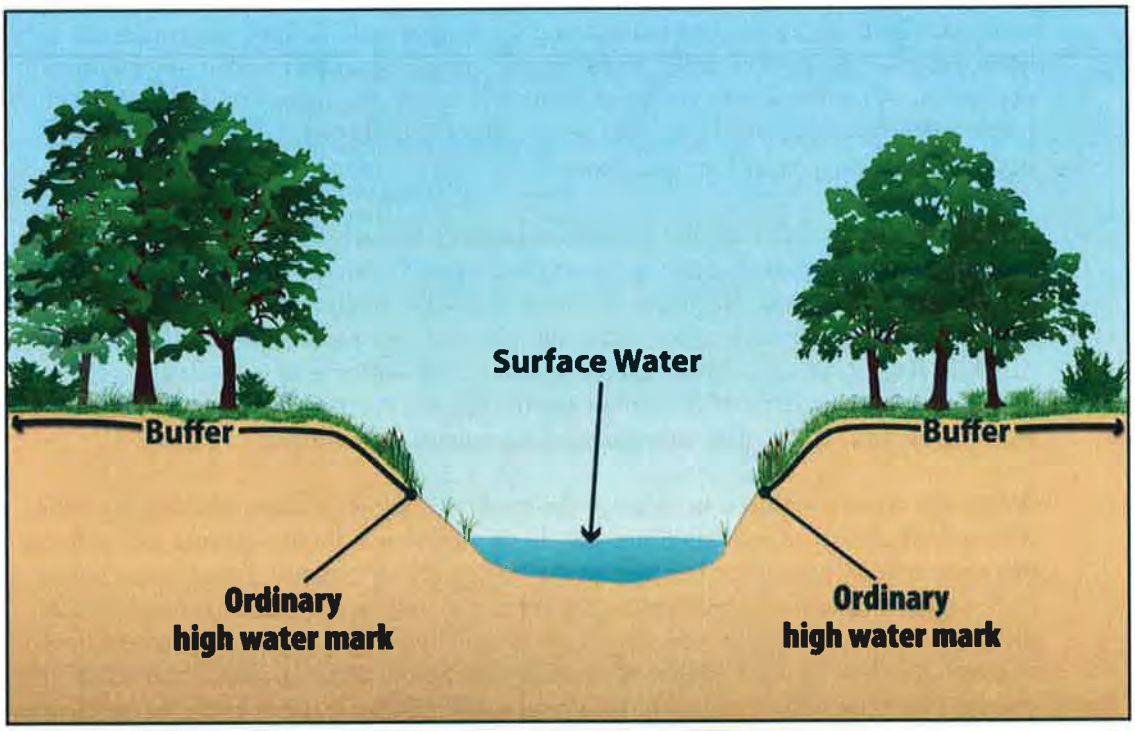
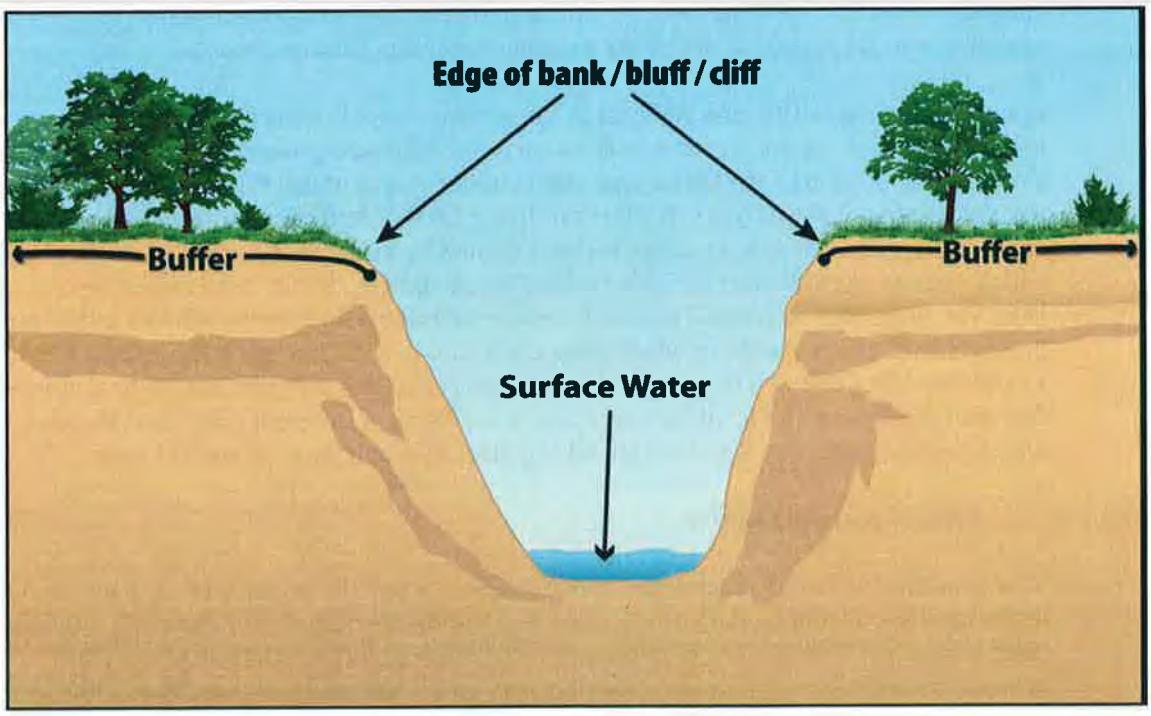


Figure D - 3. This image shows buffer measurement from the edge of the bank, bluff, or cliff, whichever is applicable.



D.2.1.2 Limits to Disturbance Within the Buffer

You are considered to be in compliance with this requirement if you retain and protect from construction activities the natural buffer that existed prior to the commencement of

construction. If the buffer area contains no vegetation prior to the commencement of construction (e.g., sand or rocky surface), you are not required to plant any additional vegetation. As noted above, any preexisting structures or impervious surfaces are allowed in the buffer provided you retain and protect from disturbance the vegetation in the buffer outside the preexisting disturbance.

To ensure that the water quality protection benefits of the buffer are retained during construction, you are prohibited from conducting any earth-disturbing activities within the buffer during permit coverage. In furtherance of this requirement, prior to commencing earth-disturbing activities on your site, you must delineate, and clearly mark off, with flags, tape, or a similar marking device, the buffer area on your site. The purpose of this requirement is to make the buffer area clearly visible to the people working on your site so that unintended disturbances are avoided.

While you are not required to enhance the quality of the vegetation that already exists within the buffer, you are encouraged to do so where such improvements will enhance the water quality protection benefits of the buffer. (Note that any disturbances within the buffer related to buffer enhancement are permitted and do not constitute construction disturbances.) For instance, you may want to consider targeted plantings where limited vegetation exists, or replacement of existing vegetation where invasive or noxious plant species (see http://plants.usda.gov/java/noxiousDriver) have taken over. In the case of invasive or noxious species, you may want to remove and replace them with a diversity of native trees, shrubs, and herbaceous plants that are well-adapted to the climatic, soil, and hydrologic conditions on the site. You are also encouraged to limit the removal of naturally deposited leaf litter, woody debris, and other biomass, as this material contributes to the ability of the buffer to retain water and filter pollutants.

If a portion of the buffer area adjacent to the surface water is owned by another party and is not under your control, you are only required to retain and protect from construction activities the portion of the buffer area that is under your control. For example, if you elect alternative 1 above (provide and maintain a 50-foot buffer), but 10 feet of land immediately adjacent to the surface water is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you must only retain and protect from construction activities the 40-foot buffer area that occurs on the property on which your construction activities are taking place. DWQ would consider you to be in compliance with this requirement regardless of the activities that are taking place in the 10-foot area that is owned by a different party than the land on which your construction activities are taking place that you have no control over.

D.2.1.3. Discharges to the Buffer

You must ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls (for example, you must comply with the Part 2.1.2.b. requirement to establish sediment controls around the downslope perimeter of your site disturbances), and if necessary to prevent erosion caused by storm water flows within the buffer, you must use velocity dissipation devices. The purpose of this requirement is to decrease the rate of storm water flow and encourage infiltration so that the pollutant filtering functions of the buffer will be achieved. To comply with this requirement, construction operators typically will use devices that physically dissipate storm water flows so that the discharge entering the buffer is spread out and slowed down.

D.2.1.4 SWPPP Documentation

You are required to document in your SWPPP the natural buffer width that is retained. For example, if you are complying with alternative 1, you must specify in your SWPPP that you are providing a 50-foot buffer. Or, if you will be complying with alternative 2, you must document the reduced width of the buffer you will be retaining (and you must also comply with the requirements in Part 2.1.2.a.iii. to describe the erosion and sediment controls you will use to achieve an equivalent sediment reduction, as described in Part D.2.2 below). Note that you must also show any buffers on your site plan in your SWPPP consistent with Part 7.2.6.c. Additionally, if any disturbances related to the exceptions in Part 2.1.2.a.v. occur within the buffer area, you must document this in the SWPPP.

D.2.2 Guidance for Providing the Equivalent Sediment Reduction as the 50-foot Buffer.

If you are selecting Alternative 2 (provide and maintain a buffer that is less than 50 feet that is supplemented by additional erosion and sediment controls that, together, achieve the equivalent sediment load reduction as the 50-foot buffer) or Alternative 3 (implement erosion and sediment controls that achieve the equivalent sediment load reduction as the 50-foot buffer), the following guidance is intended to assist you in demonstrating that you will achieve the equivalent sediment reduction as the 50-foot buffer.

D.2.2.1 Determine Whether it is Feasible to Provide a Reduced Buffer.

DWQ recognizes that there will be a number of situations in which it will be infeasible to provide and maintain a buffer of any width. While some of these situations may exempt you from the buffer requirement entirely (see D.1.2), if you do not qualify for one of these exemptions, there still may be conditions or circumstances at your site that make it infeasible to provide a natural buffer. For example, there may be sites where a significant portion of the property on which the earth-disturbing activities will occur is located within the buffer area, thereby precluding the retention of natural buffer areas. DWQ believes there are likely to be other examples of situations that make it infeasible to provide any buffer area.

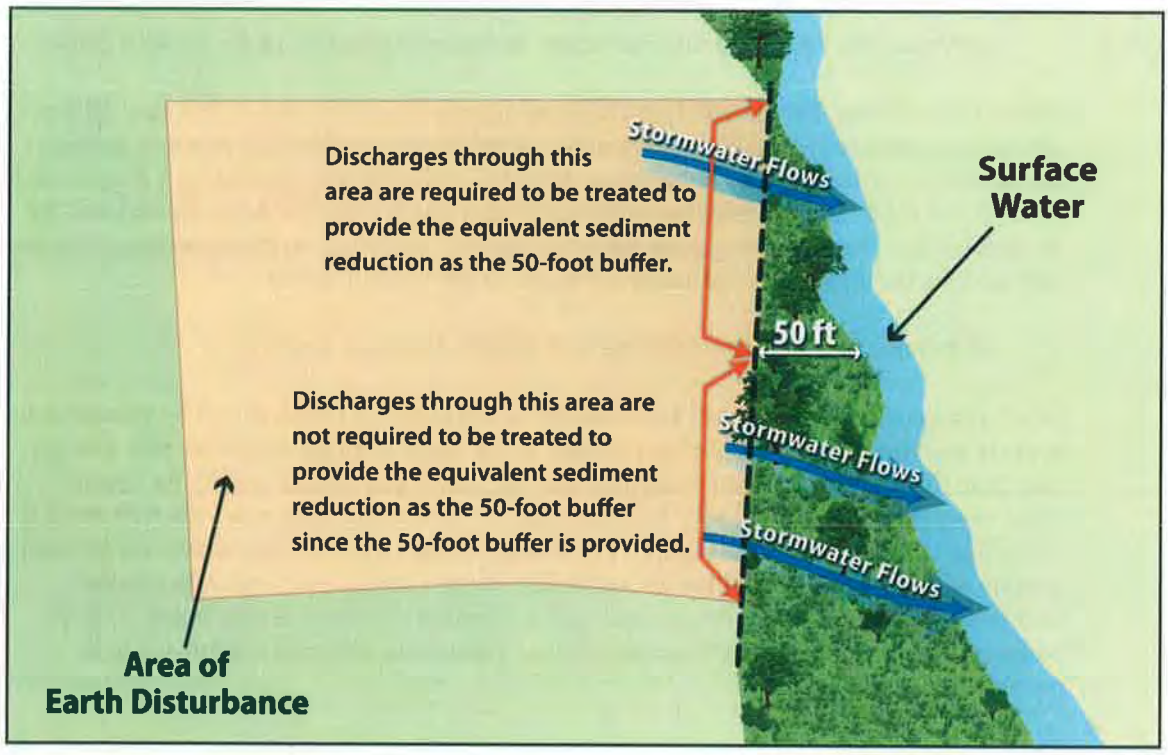
Therefore, in choosing between the 2 different compliance alternatives (Alternative 2 or 3), you should only elect to comply with Alternative 2 if it is feasible for you to retain any natural buffer on your site. (Note: For any buffer width retained, you are required to comply with the requirements in Part D.2.1, above, concerning the retention of vegetation and restricting earth disturbances.) Similarly, if you determine that it is infeasible to provide a natural buffer of any size during construction, you should elect to comply with Alternative 3. After making this determination, you should proceed to Part D.2.2.2 to determine how to provide controls that, together with any buffer areas that is being retained, if applicable, will achieve an equivalent sediment load reduction as the 50-foot buffer.

D.2.2.2 Design Controls That Provide Equivalent Sediment Reduction as 50-foot Buffer

You must next determine what additional controls must be implemented on your site that, alone or in combination with any retained natural buffer, achieve a reduction in sediment equivalent to that achieved by a 50-foot buffer.

Note that if only a portion of the natural buffer is less than 50 feet, you are only required to implement erosion and sediment controls that achieve the sediment load reduction equivalent to the 50-foot buffer for discharges through that area. You would not be required to provide treatment of storm water discharges that flow through 50 feet or more of natural buffer. See Figure D - 4.

Figure D - 4 Example of how to comply with the requirement to provide the equivalent sediment reduction when only a portion of your earth-disturbances discharge to a buffer of less than 50-feet.



To comply with this requirement, you are required to do the following:

Step1 - Estimate the sediment reduction expected from your site if you had retained a 50-foot natural buffer;

Step 2 - Design controls that alone or in combination with any width of buffer retained achieve the equivalent sediment removal efficiency as that expected from the 50-foot buffer; and

Step 3 - Document in your SWPPP how your controls will achieve the equivalent sediment removal efficiency of the 50-foot buffer.

Guidelines to help you work through these requirements are provided below.

a. Step 1 - Estimate the Sediment Reduction from the 50-foot Buffer

In order to design controls that match the sediment removal efficiency of a 50-foot buffer, you first need to know what this efficiency is for your site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of sediment controls used to reduce the discharge of sediment prior to the buffer. DWQ has adopted EPA calculations concerning this and DWQ has adapted it to Utah. EPA has simplified this calculation by developing buffer performance tables covering a range of vegetation and soil types for the areas in Utah. See Attachment , Tables D – 4 and D - 5. Note: buffer performance values in Tables D – 4 and D - 5 represent the percent of sediment captured through the use of perimeter controls (e.g., silt fences) and 50-foot buffers at disturbed sites of fixed proportions and slopes.[2]

Using Tables D – 4 and D - 5 (see Attachment 1), you can determine the sediment removal efficiency of a 50-foot buffer for your geographic area by matching the vegetative cover type that best describes your buffer area and the type of soils that predominate at your site. For example, if your site is located in moist Utah (see the 3-zone precipitation map of Utah in Appendix F), Table D - 4, and your buffer vegetation corresponds most closely with that of medium density weeds, and the soil type at your site is best typified as sand, your site's sediment removal efficiency would be 28 percent. In this step, you should choose the vegetation type

[2] EPA used the following when developing the buffer performance tables:

- The sediment removal efficiencies are based on the U.S. Department of Agriculture's RUSLE2 ("Revised Universal Soil Loss Equation 2") model for slope profiles using a 100-foot long denuded slopes.
- Sediment removal was defined as the annual sediment delivered at the downstream end of the 50-foot natural buffer (tons/yr/acre) divided by the annual yield from denuded area (tons/yr/acre).
- As perimeter controls are also required by the CGP, sediment removal is in part a function of the reduction due to a perimeter control (i.e., silt fence) located between the disturbed portion of the site and the upstream edge of the natural buffer and flow traveling through a 50-foot buffer of undisturbed natural vegetation.
- It was assumed that construction sites have a relatively uniform slope without topographic features that accelerate the concentration for erosive flows.
- It was assumed that vegetation has been removed from the disturbed portion of the site and a combination of cuts and fills have resulted in a smooth soil surface with limited retention of near-surface root mass

To represent the influence of soil, EPA analyzed 11 general soil texture classifications in its evaluation of buffer performance. To represent different types of buffer vegetation, EPA evaluated 4 or more common vegetative types for each state/territory covered under the permit (DWQ is using only that which is approximately what could be found in Utah or nearby areas). For each vegetation type evaluated, EPA considered only permanent, non-grazed and non-harvested vegetation, on the assumption that a natural buffer adjacent to the surface water will typically be undisturbed. EPA also evaluated slope steepness and found that sediment removal efficiencies present in Tables D -4 and D - 5 are achievable for slopes that are less than nine percent.

in the tables that most closely matches the vegetation that would exist naturally in the buffer area on your site regardless of the condition of the buffer. However, because you are not required to plant any additional vegetation in the buffer area, in determining what controls are necessary to meet this sediment removal equivalency in Step 2 below, you will be able to take credit for this area as a fully vegetated "natural buffer." Similarly, if a portion of the buffer area adjacent to the surface water is owned by another party and is not under your control, you can treat the area of land not under control as having the equivalent vegetative cover and soil type that predominates on the portion of the property on which your construction activities are occurring.

> For example, if your earth-disturbances occur within 50 feet of a surface water, but the 10 feet of land immediately adjacent to the surface water is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you can treat the 10 foot area adjacent to the stream as having the equivalent soil and vegetation type as predominates in the 40 foot area under your control. You would then make the same assumption in Step 2 for purposes of determining the equivalent sediment removal.

Alternatively, you may do your own calculation of the effectiveness of the 50-foot buffer based upon your site-specific conditions, and may use this number as your sediment removal equivalency standard to meet instead of using Tables D – 4 and D - 5. This calculation must be documented in your SWPPP.

b. Step 2 - Design Controls That Match the Sediment Removal Efficiency of the 50-foot Buffer

Once you have determined the estimated sediment removal efficiency of a 50-foot buffer for your site in Step 1, you will be required to select storm water controls that will provide an equivalent sediment load reductions. These controls can include the installation of a single designed control, such as a sediment pond, additional perimeter controls, or other type of device. Alternatively, you may elect to install a combination of storm water controls and to retain some amount of a buffer. Whichever control(s) you select, you must demonstrate in your SWPPP that the controls will provide at a minimum the same sediment removal capabilities as the 50-foot buffer (Step 1). You are allowed to take credit for the removal efficiencies of your required perimeter controls in your calculation of equivalency, because these were included in calculating the buffer removal efficiencies in tables D – 4 and D - 5. (Note: You are reminded that the controls must be kept in effective operating condition until you have completed final stabilization on the disturbed portions of the site discharging to the surface water.)

To make the determination that your controls and/or buffer area achieve an equivalent sediment load reduction as the 50-foot buffer, you will need to use a model or other type of calculator. As mentioned above, there are a variety of models available that can be used to support your calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other models. A couple of examples are provided in Attachment 3 to help illustrate how this determination could be made. If you are retaining a buffer of less than 50 feet, you may take credit for the removal that will occur from the reduced buffer

and only need to provide additional controls to make up the difference between the removal efficiency of a 50 foot buffer and the removal efficiency of the narrower buffer. For example, if you are retaining a 30 foot buffer, you can account for the sediment removal provided by the 30-foot buffer retained, and you will only need to design controls to make up for the additional removal provided by the 20-foot of buffer that is not being provided. To do this, you would plug the width of the buffer that is retained into RUSLE or another model, along with other storm water controls that will together achieve a sediment reduction equivalent to a natural 50-foot buffer. As described in Step 1 above, you can take credit for the area you have retained as a "natural buffer" as being fully vegetated, regardless of the condition of the buffer area.

> For example, if your earth-disturbances occur 30 feet from a surface water, but the 10 feet of land immediately adjacent to the surface water is owned by a different party than the land on which your construction activities are taking place and you do not have control over that land, you can treat the 10-foot area as a natural buffer, regardless of the activities that are taking place in the area. Therefore, you can assume (for purposes of your equivalency calculation) that your site is providing the sediment removal equivalent of a 30-foot buffer, and you will only need to design controls to make up for the additional removal provided by the 20-foot of buffer that is not being provided.

c. Step 3 - Document How Site-Specific Controls Will Achieve the Sediment Removal Efficiency of the 50-foot Buffer

In Steps 1 and 2, you determined both the expected sediment removal efficiency of a 50-foot buffer at your site, and you used this number as a performance standard to design controls to be installed at your site, which alone or in combination with any retained natural buffer, achieves the expected sediment removal efficiency of a 50-foot buffer at your site. The final step is to document in your SWPPP the information you relied on to calculate the equivalent sediment reduction as an undisturbed natural buffer. DWQ will consider your documentation to be sufficient if it generally meets the following:

- For Step 1, refer to the table in Attachment 1 that you used to derive your estimated 50-foot buffer sediment removal efficiency performance. Include information about the buffer vegetation and soil type that predominate at your site, which you used to select the sediment load reduction value in Tables D - 4 and D - 5. Or, if you conducted a site-specific calculation for sediment removal efficiency, provide the specific removal efficiency, and the information you relied on to make your site-specific calculation.

- For Step 2: (1) Specify the model you used to estimate sediment load reductions from your site; and (2) the results of calculations showing how your controls will meet or exceed the sediment removal efficiency from Step 1.

If you choose Alternative 3, you must also include in your SWPPP a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size.

D.2.3 Small Residential Lot Compliance Alternatives

> A small residential lot is a lot or grouping of lots being developed for residential purposes that will disturb less than 1 acre of land, but that is part of a larger residential project that will ultimately disturb greater than or equal to 1 acre.

In this part of Appendix D, EPA provides additional compliance alternatives for owner/operators of small residential lots. In accordance with Part 2.1.2.a.v.4), owner/operators of small residential lots who do not provide a 50-foot buffer are not required to make the demonstration outlined in Part D.2.2.2. Instead, qualifying owner/operators can comply with the buffer requirement by choosing to implement a set of traditional sediment and erosion controls from the menu of practices provided in Part D.2.3.2. DWQ allows the (EPA developed) two different alternatives for compliance. The following steps describe how a small residential lot owner/operator would achieve compliance with these 2 alternatives.

D.2.3.1 Step 1 – Determine if You are Eligible for the Small Residential Lot Compliance Alternatives

In order to be eligible for the small residential lot compliance alternatives, the following conditions must be met:

a. The lot or grouping of lots meets the definition of "small residential lot"; and

b. The owner/operator must comply with all other requirements in Part 2.1.2.a, including:

   i. Ensure that all discharges from the area of earth disturbance to the natural buffer are first treated by the site's erosion and sediment controls, and use velocity dissipation devices if necessary to prevent erosion caused by storm water within the buffer;

   ii. Document in the SWPPP the natural buffer width retained on the property, and show the buffer boundary on your site plan; and

   iii. Delineate, and clearly mark off, with flags, tape, or other similar marking device, all natural buffer areas.

D.2.3.2 Step 2 – Implement the Requirements of the Small Residential Lot Compliance Alternative Selected

You must next choose from one of two small residential lot compliance alternatives and implement the storm water control practices associated with that alternative.

Note: *The compliance alternatives provided below are not mandatory. Owner/Operators of small residential lots can alternatively choose to comply with the any of the options that are available to other sites in Part 2.1.2.a.i, described in Parts D.2.1 and D.2.2 in this appendix.*

a. Small Residential Lot Compliance Alternative 1

Alternative 1 is a straightforward tiered- technology approach that specifies the controls that a small residential lot must implement based on the buffer width retained. To achieve compliance with Alternative 1, you must implement the controls specified in Table D – 1 based on the buffer width to be retained. See footnote 3, below, for a description of the controls you must implement.

For example, if you are an owner/operator of a small residential lot that will be retaining a 35-foot buffer and you choose Small Residential Lot Compliance Alternative 1, you must implement double perimeter controls between earth disturbances and the surface water.

In addition to implementing the applicable control, you must also document in your SWPPP how you will comply with Alternative 1.

Table D - 1. Alternative 1 Requirements[3]

Retain 50-foot Buffer	Retain <50 and >30 foot Buffer	Retain ≤ 30 foot Buffer
No Additional Requirements	Double Perimeter Controls	Double Perimeter Controls and 7-Day Site Stabilization

b. Small Residential Lot Compliance Alternative 2

Alternative 2 specifies the controls that a builder of a small lot must implement based on both the buffer width retained and their risk of sediment discharge. By incorporating the sediment risk, this approach may result in the implementation of controls that are more appropriate for the site's specific conditions.

Step 1 – Determine Your Site's Sediment Risk Level

To meet the requirements of Alternative 2, you must first determine your site's sediment discharge "risk level" based on the site's slope, location, and soil type. To help you to determine your site's sediment risk level, DWQ has adapted table D-2 for areas from moist Utah, semi-arid, or arid; soil type; and different slope conditions. On table D-2, first select the slope; then select the climate (moist, semi-arid, or arid); then select the soil type.

[3] Description of Additional Controls Applicable to Small Residential Lot Compliance Alternatives 1 and 2:

- **No Additional Requirements**: If you implement a buffer of 50 feet or greater, then you are not subject to any additional requirements. Note that you are required to install perimeter controls between the disturbed portions of your site and the buffer in accordance with Part 2.1.2.b.
- **Double Perimeter Control**: In addition to the reduced buffer width retained on your site, you must provide a double row of perimeter controls between the disturbed portion of your site and the surface water spaced a minimum of 5 feet apart.
- **Double Perimeter Control and 7-Day Site Stabilization**: In addition to the reduced buffer width retained on your site and the perimeter control implemented in accordance with Part 2.1.2.b, you must provide a double row of perimeter controls between the disturbed portion of your site and the surface water spaced a minimum of 5 feet apart, and you are required to complete the stabilization activities specified in Parts 2.2.1.b.i or 2.2.2.b within 7 calendar days (in place of what is normally required) of the temporary or permanent cessation of earth-disturbing activities.

All moist and semi-arid risks are low for all soil types. The only moderate risk is arid at 9 % slope to 15 % slope for 3 categories of soil; and arid for loam, silt, sandy loam, or silt loam for all slopes over 3%. The only times for concern of a risk over "low" is when the slope is over 9%, or when the soil is loam, silt, sandy loam, or silt loam.

If you have a site in moist or semi-arid Utah, the risk will always be low. If you have a site in arid Utah where the slope is 5% and the soil is sandy, your risk is "moderate". After you determine the "risk level" (e.g., "low", "moderate", or "high") that corresponds to your site's location and predominant soil type[4] you determine the controls you must apply.

Table D - 2. Risk Levels for Sites Based on the 3-Zone Precipitation Map for Utah (see Appendix F)

Soil Type / Location	Clay	Silty Clay, Loam, or Clay-Loam	Sand	Sandy Clay, Loam, Loamy Sand, or Silty Clay	Loam, Silt, Sandy Loam, or Silt Loam	
Moist & Semi-Arid	Low	Low	Low	Low	Low	Risk Levels for Sites with Average Slopes of ≤ 3 Percent
Arid	Low	Low	Low	Low	Low	
Moist & Semi-Arid	Low	Low	Low	Low	Low	Risk Levels for Sites with Average Slopes of > 3 Percent and ≤ 6 Percent
Arid	Low	Low	Low	Low	Moderate	
Moist & Semi-Arid	Low	Low	Low	Low	Low	Risk Levels for Sites with Average Slopes of > 6 Percent and ≤ 9 Percent
Arid	Low	Low	Low	Low	Moderate	
Moist & Semi-Arid	Low	Low	Low	Low	Low	Risk Levels for Sites with Average Slopes of > 9 Percent and ≤ 15 Percent
Arid	Low	Moderate	Low	Moderate	Moderate	

Step 2 – Determine Which Additional Controls Apply

Once you determine your site's "risk level", you must next determine the additional controls you need to implement on your site, based on the width of buffer you plan

[4] One source for determining your site's predominant soil type is the USDA's Web Soil Survey located at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

to retain. Table D - 3 specifies the requirements that apply based on the "risk level" and buffer width retained. See footnote 3, above, for a description of the additional controls that are required.

For example, if you are the owner/operator of a small residential lot that falls into the "moderate" risk level, and you decide to retain a 20-foot buffer, using Table D-3 you would determine that you need to implement double perimeter controls to achieve compliance with Part 2.1.2.a.

You must also document in your SWPPP your compliance with Alternative 2.

Table D - 3. Alternative 2 Requirements[2]

Risk Level Based on Estimated Soil Erosion	Retain ≥ 50'Buffer	Retain <50' and >30' Buffer	Retain ≤30' and >10' Buffer	Retain ≤ 10' Buffer
Low Risk	No Additional Requirements	No Additional Requirements	Double Perimeter Control	Double Perimeter Control
Moderate Risk	No Additional Requirements	Double Perimeter Control	Double Perimeter Control	Double Perimeter Control and 7-Day Site Stabilization
High Risk	No Additional Requirements	Double Perimeter Control	Double Perimeter Control and 7-Day Site Stabilization	Double Perimeter Control and 7-Day Site Stabilization

ATTACHMENT 1

Sediment Removal Efficiency Tables[5]

EPA recognizes that very high removal efficiencies, even where theoretically achievable by a 50-foot buffer, may be very difficult to achieve in practice using alternative controls. Therefore in the tables below, EPA has limited the removal efficiencies to a maximum of 90%. Efficiencies that were calculated at greater than 90% are shown as 90%, and this is the minimum percent removal that must be achieved by alternative controls.

D-4. Estimated 50-foot Buffer Performance in Semi-Arid and Moist Areas*

	Estimated % Sediment Removal				
Type of Buffer vegetation**	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam , Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Tall Fescue Grass	42	52	44	48	85
Medium-density Weeds	28	30	28	26	60
Low-density Warm-season Native Bunch Grass (i.e., Grama Grass)	25	26	24	24	55
Northern Mixed Prairie Grass	28	30	28	26	50
Northern Range Cold Desert Shrubs	28	28	24	26	50

*Applicable for sites with less than nine percent slope.
**Characterization focuses on the under-story vegetation

D-5. Estimated 50-foot Buffer Performance in Arid Areas*

	Estimated % Sediment Removal				
Type of Buffer vegetation**	Clay	Silty Clay Loam or Clay-Loam	Sand	Sandy Clay Loam , Loamy Sand or Silty Clay	Loam, Silt, Sandy Loam or Silt Loam
Tall Fescue Grass	71	85	80	86	90
Medium-density Weeds	56	73	55	66	78
Low-density Warm-season Native Bunch Grass (i.e., Grama Grass)	53	70	51	62	67
Southern Mixed Prairie Grass	53	71	52	63	50
Southern Range Cold Desert Shrubs	56	73	55	65	53

*Applicable for sites with less than nine percent slope.
**Characterization focuses on the under-story vegetation

[5] The buffer performances were calculated based on a denuded slope upgradient of a 50-foot buffer and perimeter controls, as perimeter controls are a standard requirement (see Part 2.1.2.b).

ATTACHMENT 2

Using the Sediment Removal Efficiency Tables – Questions and Answers

- What if my specific buffer vegetation is not represented in Tables D – 4, and D- 5. If you do not see a description of the type of vegetation present at your site, you should choose the vegetation type that most closely matches the vegetation type on your site. You can contact your local Cooperative Extension Service Office (www.csrees.usda.gov/Extension) for assistance in determining the vegetation types that most closely matches your site-specific vegetation.
- What if there is high variability in local soils? EPA recognizes that there may be a number of different soil type(s) on any given construction site. General soil information can be obtained from USDA soil survey reports (http://websoilsurvey.nrcs.usda.gov) or from individual site assessments performed by a certified soil expert. Tables D- 4 through D- 5 present eleven generic soil texture classes, grouping individual textures where EPA has determined that performance is similar. If your site contains different soil texture classes, you should use the soil type that best approximates the predominant soil type at your site.
- What if my site slope is greater than 9 percent after final grade is reached? As indicated in the buffer performance tables, the estimated sediment removal efficiencies are associated with disturbed slopes of up to 9 percent grade. Where your graded site has an average slope of greater than 9 percent, you should calculate a site-specific buffer performance.
- How do I calculate my own estimates for sediment reduction at my specific site? If you determine that it is necessary to calculate your own sediment removal efficiency using site specific conditions (e.g., slopes at your site are greater than 9 percent), you can do so by choosing from a range of available mathematical models that are available to facilitate this calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other equivalent models.
- What is my estimated buffer performance if my site location is not represented by Tables D-4 through D-5? If your site is located in an area not represented by Tables D-4 through D-5, you should use the table that most closely approximates conditions at your site. You may also choose to conduct a site-specific calculation of the buffer performance.
- What if only a portion of my site drains to the buffer area? If only a portion of your site drains to a surface water, where that water is within 50 feet of your construction activities, you are only required to meet the equivalency requirement for the storm water flows corresponding to those portions of the site. See Example 2 below for an example of how this is expected to work.

ATTACHMENT 3

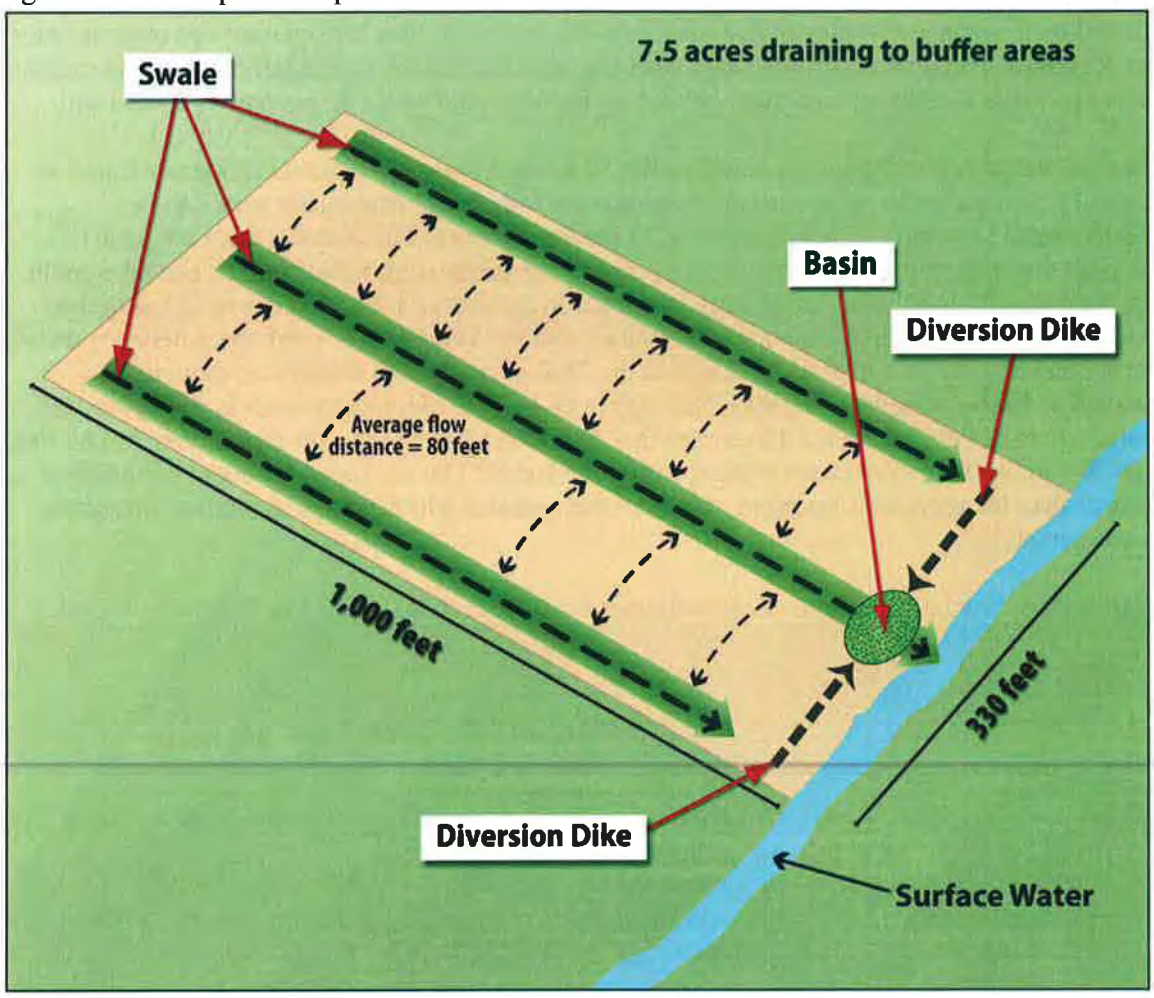
Examples of How to Use the Sediment Removal Efficiency Tables

Example 1. Comparatively Wet Location (7.5 acre site located in Moist Utah)

The operator of a 7.5-acre construction site in Moist Utah has determined that it is infeasible to establish a buffer of any size on their site, and is now required to select and install controls that will achieve an equivalent sediment load reduction as that estimated in Table D- 4 for their site conditions. The first step is to identify what percentage of eroded sediment is estimated to be retained from a 50-foot buffer. For this example, it is assumed that the site has a relatively uniform gentle slope (3 percent), so Table D- 4 can be used to estimate the 50-foot buffer sediment load reduction. If the site's buffer vegetation is best typified by northern mix prairie grass and the underlying soil is of a type best described as loamy sand, the 50-foot buffer is projected to capture 26 percent of eroded sediment from the construction site.

The second step is to determine what sediment controls can be selected and installed in combination with the perimeter controls already required to be implemented at the site (see Part 2.1.2.b), which will achieve the 26 percent sediment removal efficiency from Table D- 4. For this example, using the RUSLE2 profile model, it was determined that installing a pair of shallow sloped diversion ditches to convey runoff to a well-designed and maintained sediment basin provides 99 percent sediment removal. Because the estimated sediment reduction is greater than the required 26 percent that a 50-foot buffer provides, the operator will have met the buffer requirements. See Figure D- 5. The operator could also choose a different set of controls, as long as they achieve at least a 90 percent sediment removal efficiency.

Figure D- 5. Example 1 – Equivalent Sediment Load Reductions at a 7.5 ac Site in moist Utah.



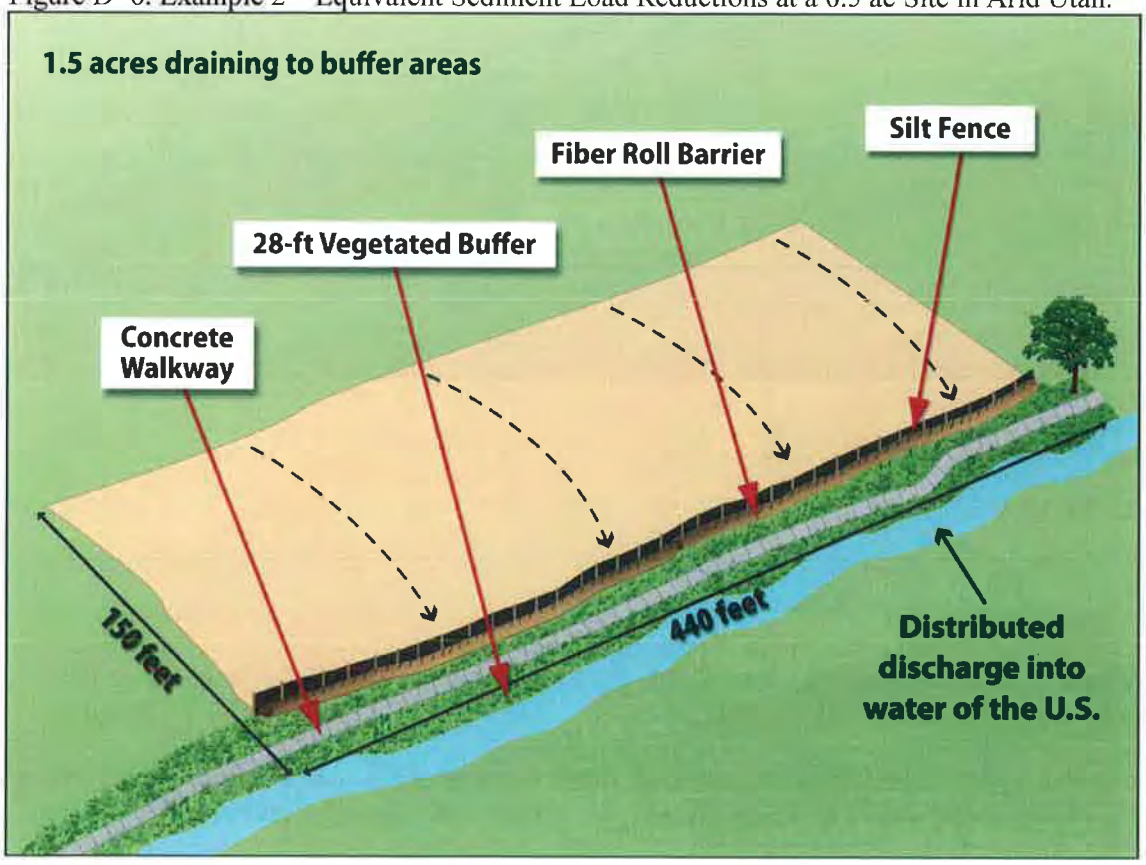
Example 2. Arid Location With Pre-existing Disturbances in the Natural Buffer (6.5 acre site located in Arid Utah)

An operator of a site in Arid Utah determines that it is not practicable to provide a 50-foot buffer, but a 28-foot buffer can be provided. Because the operator will provide a buffer that is less than 50 feet, the operator must determine which controls, in combination with the 28-foot buffer, achieve a sediment load reduction equivalent to the 50-foot buffer. In this example, the project will disturb 6.5 acres of land, but only 1.5 acres of the total disturbed area drains to the buffer area. Within the 28-foot buffer area is a preexisting concrete walkway. Similar to Example 1, the equivalence analysis starts with Step 1 (Part D.2.2.b) with a review of the Arid Utah buffer performance (Table D- 5). The operator determines that the predominate vegetation type in the

buffer area is prairie grass and the soil type is similar to silt, and that the site is of a uniform, shallow slope (e.g., 3 percent grade). Although the operator will take credit for the disturbance caused by the concrete walkway as a natural buffer in Step 2, here the operator can treat the entire buffer area as being naturally vegetated with prairie grass. Based on this information, the operator refers to Table D- 5 to estimate that the 50-foot buffer would retain 50 percent of eroded soil.

The second step is to determine, based on the 50 percent sediment removal efficiency found in Table D- 5, what sediment controls in combination with the 28-foot buffer area, can be implemented to reduce sediment loads by 50 percent or more. The operator does not have to account the reduction in buffer function caused by the preexisting walkway, and can take credit for the entire 28-foot buffer being fully vegetated in the analysis. For this example, using the RUSLE2 profile model, the operator determined that installing a fiber roll barrier between the silt fence (already required by Part 2.1.2.b) and the 28-foot buffer will achieve an estimated 84 percent sediment removal efficiency. See Figure D- 6. Note that this operator is subject to the requirement in Part 2.1.2.a.ii.1.) to ensure that discharges through the silt fence, fiber roll barrier, and 28-foot buffer do not cause erosion within the buffer. The estimated sediment reduction is greater than the required 50 percent; therefore the operator will have met the buffer alternative requirement.

Figure D- 6. Example 2 – Equivalent Sediment Load Reductions at a 6.5 ac Site in Arid Utah.



Appendix E – List of MS4s with Municipal Storm Water Permits

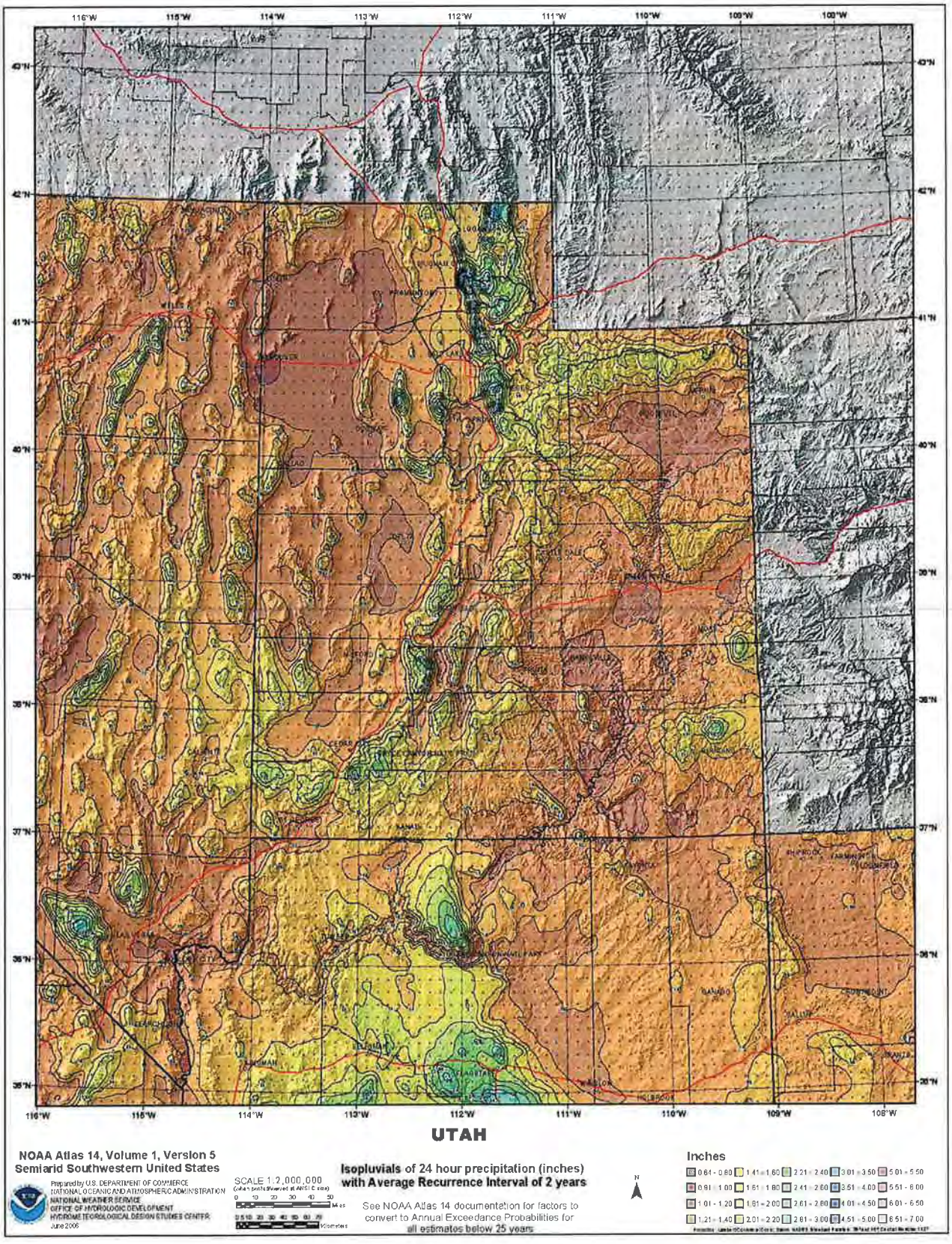
(This appendix is not included in the public notice review as it is for help and assistance to aid compliance and is not regulatory in nature. It may be modified during the term of the permit if the list of MS4s change during the permit term.) The MS4s listed below are regulated by a municipal storm water permit. Under the municipal storm water permit they are required to regulate construction activity in their areas. Areas that are not covered by the MS4s listed below are directly regulated by DWQ.

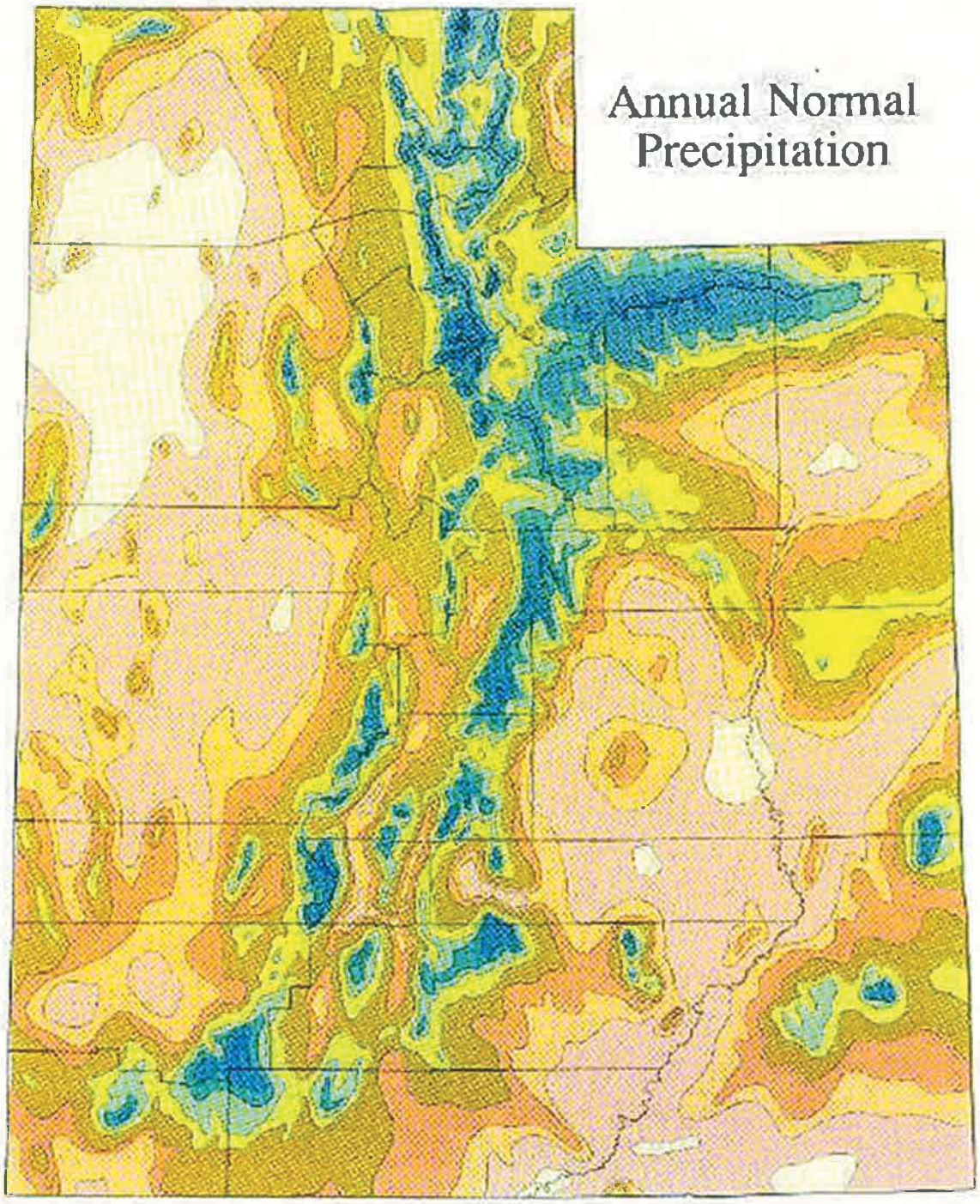
Alpine
American Fork
Bluffdale
Bountiful
Cedar Hills
Centerville
Clearfield
Clinton
Cottonwood Heights
Davis County (unincorporated area)
Draper
Farmington
Farr West City
Fruit Heights
Harrisville
Herriman
Highland
Hill Air Force
Holladay
Hooper
Hyde Park
Hyrum City
Ivins City
Kaysville
Layton
Lehi
Lindon
Logan
Mapleton
Marriott-Slaterville
Midvale
Millville
Murray
Nibley
North Logan City
North Ogden
North Salt Lake
Ogden
Orem
Plain City
Pleasant Grove
Pleasant View
Providence
Provo
River Heights
Riverdale
Riverton
Roy
Salt Lake City
Salt Lake County (unincorporated area)
Sandy
Santa Clara
Smithfield
South Jordan
South Ogden City
South Salt Lake
South Weber
Springville
St. George
Sunset
Syracuse
Taylorsville
UDOT
Uintah City
University of Utah
Utah State Prison
Veterans Affairs Medical Center
Washington
Washington Terrace
Weber County (unincorprated area)
Weber State University
Wellsville
West Bountiful
West Haven
West Jordan
West Point City
West Valley City
Woods Cross

Appendix F – 2-Year, 24-Hour Storm Frequencies in Utah
Average Annual Rainfall in Utah
3 Zone Precipitation Map for Utah

(See next page)

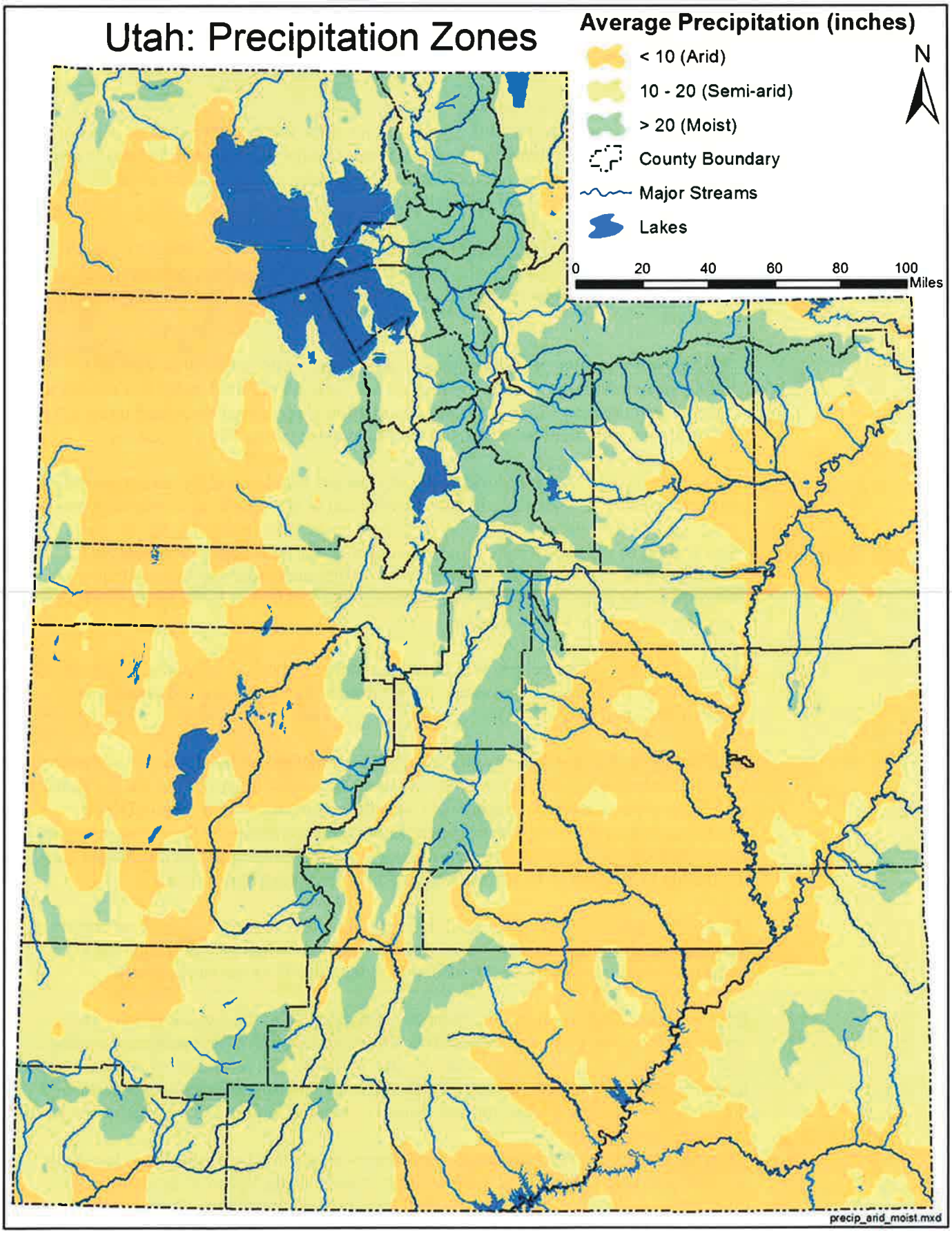
(This appendix is not included in the public notice review as it is for help and assistance to aid compliance and is not regulatory in nature. It may be modified during the term of the permit if it is found that it can be improved on.)


116°W
115°W
114°W
113°W
112°W
111°W
110°W
109°W
108°W
43°N
42°N
41°N
40°N
39°N
38°N
37°N
36°N
35°N
UTAH
NOAA Atlas 14, Volume 1, Version 5
Semiarid Southwestern United States
Prepared by U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
OFFICE OF HYDROLOGIC DEVELOPMENT
HYDROMETEOROLOGICAL DESIGN STUDIES CENTER
June 2006
SCALE 1:2,000,000
Miles
Kilometers
Isopluvials of 24 hour precipitation (inches)
with Average Recurrence Interval of 2 years
See NOAA Atlas 14 documentation for factors to
convert to Annual Exceedance Probabilities for
all estimates below 25 years
N
Inches
0.64 - 0.80
0.81 - 1.00
1.01 - 1.20
1.21 - 1.40
1.41 - 1.60
1.61 - 1.80
1.81 - 2.00
2.01 - 2.20
2.21 - 2.40
2.41 - 2.60
2.61 - 2.80
2.81 - 3.00
3.01 - 3.50
3.51 - 4.00
4.01 - 4.50
4.51 - 5.00
5.01 - 5.50
5.51 - 6.00
6.01 - 6.50
6.51 - 7.00



Legend
Precipitation (In inches)

more than 49.9	25.0-29.9	12.0-15.9	6.0-7.9
40.0-49.9	20.0-24.9	10.0-11.9	less than 6
30.0-39.9	16.0-19.9	8.0-9.9	


Utah: Precipitation Zones
Average Precipitation (inches)
< 10 (Arid)
10 - 20 (Semi-arid)
> 20 (Moist)
County Boundary
Major Streams
Lakes
N
0
20
40
60
80
100
Miles
precip_arid_moist.mxd

Appendix G – Standard Permit Conditions

G.1. Duty to Comply.

1. The permittee must comply with all conditions of the UPDES permit. Any permit noncompliance is a violation of the Utah Water Quality Act, as amended and is grounds for enforcement action; permit termination, revocation and reissuance or modification; or denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions. The Utah Water Quality Act, in 19-5-115, provides that any person who violates the Act, or any permit, rule, or order adopted under it is subject to a civil penalty not to exceed $10,000 per day of such violation.

3. Willful Non-Compliance or Negligence. Any person who willfully or with gross negligence violates the Act, or any permit, rule or order adopted under it is subject to a fine of not more than $25,000 per day of violation. Any person convicted under 19-5-115 a second time shall be punished by a fine not exceeding $50,000 per day.

4. False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act, the rules, or this Permit, or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for 6 months, or by both. Utah Code Ann. § 19-5-115(4).

G.2. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of the permit, the permittee shall apply for and obtain a new permit as required in R317-8-3.1

G.3. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (Upon reduction, loss, or failure of the treatment facility, the permittee, to the extent necessary to maintain compliance with the permit, shall control production of all discharges until the facility is restored or an alternative method of treatment is provided.)

G.4. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of the UPDES permit which has a reasonable likelihood of adversely affecting human health or the environment.

G.5. Duty to Provide Information. The permittee shall furnish to the Executive Secretary, within a reasonable time, any information which the Executive Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with this permit. The permittee shall also furnish to the Executive Secretary, upon request, copies of records required to be kept by the permit.

G.6. Other Information. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Director, he or she shall promptly submit such facts or information.

G.7. Oil and Hazardous Substance Liability. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under the "Act".

G.8. Property Rights. The issuance of this Permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

G.9. Severability. The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit shall not be affected thereby.

G.10. Records Retention.

1. The Permittee shall retain copies of SWPPPs and all reports required by this Permit, and records of all data used to complete the Notice of Intent to be covered by this Permit, for a period of at least three years from the date that the site is finally stabilized. This period may be extended by request of the Director at any time.

2. After final stabilization of the construction site is complete, the SWPPP is no longer required to be maintained on site, but may be maintained by the Permittee(s) at its primary headquarters. However, access to the SWPPP will continue as described in Part 3.2.

G.11. Addresses. All written correspondence under this permit shall be directed to the Division of Water Quality at the following address:

Department of Environmental Quality
Division of Water Quality
195 North 1950 West
PO Box 144870
Salt Lake City, Utah 84114-4870

G.12. State Laws.

1. Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Utah Code Ann. § 19-5-117.

2. No condition of this Permit shall release the Permittee from any responsibility or requirements under other environmental statutes or regulations.

G.13. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit and with the requirements of SWPPPs. Proper operation and maintenance also

includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a Permittee only when necessary to achieve compliance with the conditions of the Permit.

G.14. Inspection and Entry. The Permittee shall allow, upon presentation of credentials, the Director or an authorized representative:

1. To enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this Permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and

4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by law, any substances or parameters at any location.

G.15. Reopener Clause.

1. Reopener Due to Water Quality Impacts. If there is evidence indicating that the storm water discharges authorized by this Permit cause, have the reasonable potential to cause or contribute to, a violation of a water quality standard, the discharger may be required to obtain an individual permit or an alternative general permit in accordance with Part 2.3 of this Permit or the Permit may be modified to include different limitations and/or requirements.

2. Reopener Guidelines. Permit modification or revocation will be conducted according to UAC R317-8-5.6 and UAC R317-8-6.2.

3. Permit Actions. This Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Permit condition.

G.16. Signatory Requirements.

1. All Notices of Intent, SWPPPs, reports, certifications or information submitted to the Executive Secretary, or that this Permit requires to be maintained by the Permittee, shall be signed as follows:

1.1. All Notices of Intent shall be signed as follows:

1.1.1. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross

annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

1.1.2. For a partnership of sole proprietorship: by a general partner or the proprietor, respectively; or

1.1.3. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

1.2. All reports required by the Permit and other information requested by the Director or by an authorized representative of the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1.2.1. The authorization is made in writing by a person described above and submitted to the Director; and

1.2.2. The authorization specifies either an individual or a position having responsibility for overall operation of the regulated site, facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

1.3. Certification. Any person signing documents under this Part G.16 shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Appendix H – Notice of Intent Form (NOI)

Please Obtain a copy of the NOI from the DWQ web site at
http://www.waterquality.utah.gov/UPDES/stormwatercon.htm

Appendix I – Notice of Termination (NOT)

Please Obtain a copy of the NOT from the DWQ web site at
http://www.waterquality.utah.gov/UPDES/stormwatercon.htm

Appendix J – Visual Monitoring Form

(This appendix is not included in the public notice review as it is for help and assistance to aid compliance and is not regulatory in nature. It may be modified during the term of the permit if it is found that it can be improved on.)

VISUAL MONITORING FORM

Project Name: _____

Project Location: _____

Name of Sample Taker: _____

Date_____ Time_____

Describe the location of where the sample was taken._____

_____

Describe how the sample was collected:

_____

_____

Weather conditions at time of sample taking (circle all that apply):

Snowing Raining Sunny Cloudy Windy Warm Cold Freezing Other __

COLOR (Circle the one that apply):

Black Dark Grey Medium Grey Light Grey Dark Chocolate Brown

Medium Brown Light Brown Tan Yellow Green Other

Comments:

_____

_____

INTENSITY OF COLOR: Very Intense Prominent Moderately Perceptible Hardly Perceptible

Comments:

_____

_____

CLARITY (Circle the right one):

Totally Opaque Slightly Translucent Translucent Nearly Transparent Transparent/Clear

ODOR (Circle the ones that apply):

Diesel Gasoline Petroleum Solvent Musty Sewage Chlorine

Rotten Egg Sulfur No Odor Noxious Other _____

Comments:

_____

_____

_____

FLOATING SOLIDS

Styrofoam beads sticks/leaves/grass scum film floating particles

(Description): _____

_____

_____

SUSPENDED AND SETTLED SOLIDS (Description)

_____

_____

_____

FOAM, OIL, SHEEN OR OTHER OBVIOUS
INDICATORS OF POLLUTION

_____

_____

_____

Appendix K – Erosivity Waiver Form

The EPA has a web site that automatically calculates the "R" factor that web site is:
http://cfpub1.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm

EROSIVITY WAIVER FORM

Owner: _____

Address: _____

City: _____ State: _____ zip: _____

Contact Person: _____ Phone: _____

Email: _____

General Contractor: _____

Address: _____

City: _____ State: _____ zip: _____

Contact Person: _____ Phone: _____

Email: _____

Project Name: _____

Address: _____

City: _____ State: _____ zip: _____

Factors Needed for Calculation of R Factor

Latitude: _____

Longitude: _____

Start Date: _____

End Date: _____

"R" Factor Value: _____

Hand calculated ☐ EPA calculated ☐

The Project Should not Extend Past the End Date

If the project continues beyond the end date submitted in the waiver the owner must recalculate the "R" factor using the new end date. If the new "R" factor is 5 or more the owner must immediately obtain coverage under the UPDES CGP. The waiver should only be used if the owner has confidence the project can be completed within the start and end date submitted in the waiver.

Appendix L – Example Self-Inspection Form

(This appendix is not included in the public notice review as it is for help and assistance to aid compliance and is not regulatory in nature. It may be modified during the term of the permit if it is found that it can be improved on.)

CONSTRUCTION STORM WATER SELF-INSPECTION FORM

Inspection General Information

Project Name	Date
Address/Location	Start Time
City State zip	End Time

Contractor Name	Inspector Name
Address	Inspector Phone
City State zip	Inspector Qualifications

Local Jurisdiction	UPDES Permit No.
Permit Coverage Date	Permit Expiration Date

Weather Conditions

Windy ☐ Hot ☐ Cold ☐ Temperate ☐ Raining ☐ Snowing ☐

Clear ☐ Partly Cloudy ☐ Heavy Clouds ☐ Wet Conditions ☐ Dry Conditions ☐

Precipitation Events Since the Last Inspection

Day of Event _____ Duration of Event _____ Inches of Precip. _____

Inspection Schedule

Weekly ☐ Bi-weekly & after a half inch event ☐ Other (specify) _____

Construction Phase

Clearing/Grubbing ☐ Demolition ☐ Grading/Excavation ☐ Utilities/Foundation Work ☐

Above Ground Erection ☐ Landscaping/Paving ☐

Permit Requirements to Look For

Water Bodies & Buffer Zones ☐ Discharge to High Quality or Sensitive Water ☐

Off site areas of the Project ☐ Areas over 14 days w/o stabilization ☐ Perimeter Controls ☐

Good House Keeping (track out, waste disposal, sanitary, washout areas) ☐ Material Storage ☐

SWPPP planned SW controls ☐ Discharge Points ☐ SWPPP is updated with site ☐

Accumulations of Sediment ☐ Places where SW controls are needed ☐

BMP Designation	Okay	Not Okay	BMP Condition, Corrective Action Required.
Are all pollution sources controlled? Do any other problems exist?			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			
[BMP # and Name] From SWPPP Template			

Overall Site Conditions (These pages are suggested if the permittee chooses. They can be deleted if desired)

Concerns to be Checked	Implemented Y/N/NA	Maintained Y/N/NA	Corrective Action	Date Corrected
Are all slopes and disturbed areas not actively being worked properly stabilized?				
Are all water bodies (e.g., streams, wetlands) protected with buffers or similar BMPs?				
Are perimeter controls and sediment controls properly installed and maintained (anchored into soil)?				
Has the sediment build up been removed from BMPs designed to catch sediment?				
Are discharge points and receiving waters free of any sediment deposits?				
Is all sediment that has been deposited off site cleaned up?				
Are storm drain inlets properly protected?				
Does the construction exit have a track out pad (or other BMP)?				
Is the track out pad (or other BMP) effective in preventing sediment from being tracked into the street?				
Is trash/litter from work areas collected and placed in covered dumpsters?				
Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?				
Are vehicle/equipment fueling, cleaning, and maintenance areas managed properly with no illicit discharges?				
Are fuels and construction materials and chemicals that are potential storm water contaminants covered or in secondary containment?				
Are non-storm water discharges (e.g., wash water, dewatering, wheel washing) properly controlled?				
Is run-on prevented or properly managed?				
Are there locations where additional BMP's are necessary?				
Are material piles protected from weather and placed on hard surfaces only day by day for placement and not for storage?				
Are all BMPs and storm water control measures accurately shown and updated on the SWPPP map?				

Corrective Action Log

Date & Time of Inspection or Random Notice of Problem	Inspection or Randomly Noticed	BMP # and Name	Description of BMP Deficiency (or reference the inspection report)	Initial	Correction Date	How the BMP was Corrected	SWPPP Change Y/N

Signature Block

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
Print Name of Inspector	Date
Signature	

Appendix M – Notice for New Owner/Operators

Ownership Transfer Form

Upon transfer of ownership or control of the subject property under this Permit (see section 8.2.2.a.) coverage under the UPDES CGP must continue until stabilization requirements are satisfied according to permit requirements. This requirement may be met by either of the following **transfer options** (this form is must be filled out and submitted to DWQ in either case):

1. Obtaining coverage under a new and independent Notice of Intent (NOI – the application process to procure coverage under the UPDES CGP). This results in a new permit tracking number for the new owner.
2. Coordinating with the previous owners and the State of Utah, Department of Environmental Quality, Division of Water Quality where ownership, other information, and signatures (including electronic certifications) contained in the NOI that is current for the property is changed to reflect the change in ownership and responsible parties for conducting construction activities (general contractor). For this step the new owner would assume the responsibilities of the original CGP coverage. This continues the original permit tracking number.

Name of Previous Owner _____ Telephone Number _____

Address of Previous Owner _____ City _____ State _____ Zip _____

Signature of Previous Owner _____ Date _____

Name of New Owner _____ Telephone Number _____

Address of New Owner _____ City _____ State _____ Zip _____

Signature of New Owner _____ Date _____

Name of Previous Operator Telephone Number

Address of Previous Operator City State Zip

Signature of Previous Operator Date

Name of New Operator Telephone Number

Address of New Operator City State Zip

Signature of New Operator Date

PROJECT NAME AND LOCATION

Previous Permit Number Name of Project

Address of Project City State Zip

Longitude Latitude

WHAT KIND OF TRANSFER: PARTIAL OR TOTAL?

Is this a transfer of ownership of partial or total of the permitted area? Partial ☐
Total ☐

If this is a transfer of part of the permitted area to a new owner, describe what part:

_____

_____

_____

Will there be a new SWPPP prepared? YES ☐ NO ☐

Please update the General Contractor Information (see transfer options 1 or 2, first page).
If this is a partial transfer the only option is 1.

This form must be submitted to the Municipality of Jurisdiction and DWQ

To submit to DWQ either email to the construction storm water coordinator or,
FAX to 801-535-4301
Or mail to DWQ
PO Box 144870
Salt Lake City, UT 84114-4870

SWPPP TEMPLATE

Table of Contents

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING .....
1.1 Project / Site Information .....
1.2 Responsible Parties .....
1.3 Nature of Construction Activities .....
1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns .....
1.5 Construction Site Estimates .....
1.6 Receiving Waters .....
1.7 Sensitive Areas to be Protected .....
1.8 Potential Sources of Pollution .....
1.9 Endangered Species .....
1.10 Historic Preservation .....
1.11 Maps and Drawings .....

SECTION 2: EROSION AND SEDIMENT CONTROL .....
2.1 Minimize Disturbed Areas and Protect Natural Features and Soil .....
2.2 Construction Phasing .....
2.3 Control Storm Water Flowing Onto and Through the Project .....
2.4 Stabilize Soils .....
2.5 Slope Protection .....
2.6 Storm Drain Inlet Protection .....
2.7 Perimeter Control and Sediment Barriers .....
2.8 Sediment Retention .....
2.9 Stabilized Construction Exits .....
2.10 Additional BMP's .....

SECTION 3: GOOD HOUSEKEEPING .....
3.1 Waste Management BMP's .....
3.2 Material Staging / Storage BMP's .....
3.3 Washout Area BMP's .....
3.4 Vehicle and Equipment Fueling and Maintenance BMP's .....
3.5 Spill Prevention and Control .....
3.6 Allowable Non-Storm Water Discharge Management .....
3.7 Additional BMP's .....

SECTION 4: POST-CONSTRUCTION .....
4.1 Post-Construction BMP's .....

SECTION 5: INSPECTIONS .....

5.1 Inspections .....
5.2 Delegation of Authority .....
5.3 Corrective Action Log.....

SECTION 6: RECORDKEEPING AND TRAINING .....
6.1 Recordkeeping .....
6.2 Training.....

SECTION 7: FINALSTABALIZATION.....
7.1 Final Stabilization.....

SECTION 8: CERTIFICATION.....

SECTION 9: SWPPP APPENDICE.....

APPENDIX

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 Project / Site Information

Project Name: NAME OF PROJECT
Project Address: ADDRESS OF PROJECT
Latitude / Longitude: LAT/LONG OF PROJECT
Method of Determining Latitude / Longitude: LAT/LONG METHOD
UPDES Permit Number: PERMIT #
Is this project considered a federal facility? ☐ YES ☐NO

1.2 Responsible Parties

Project Owner / Developer

Company Name: COMPANY NAME
Contact Person: CONTACT PERSON
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP
Office Number: OFFICE NUMBER
Mobile Number: MOBILE NUMBER
Email Address: EMAIL ADDRESS

General Contractor

Company Name: COMPANY NAME
Project Manager: PROJECT MANAGER
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP
Office Number: OFFICE NUMBER
Mobile Number: MOBILE NUMBER
Email Address: EMAIL ADDRESS

Subcontractor(s)

Company Name: COMPANY NAME
Company Trade: COMPANY TRADE
Superintendent: SUPERINTENDENT
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP
Office Number: OFFICE NUMBER
Mobile Number: MOBILE NUMBER
Email Address: EMAIL ADDRESS

SWPPP Inspector / Manager

Company Name: COMPANY NAME
Inspector / Manager: INSPECTOR / MANAGER
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP

Office Number: OFFICE NUMBER
Mobile Number: MOBILE NUMBER
Email Address: EMAIL ADDRESS

SWPPP Preparer

Company Name: COMPANY NAME
Name of Preparer: PERSON WHO PREPAERED SWPPP
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP
Office Number: OFFICE NUMBER
Mobile Number: MOBILE NUMBER
Email Address: EMAIL ADDRESS

Emergency 24-Hour Contact

Company Name: COMPANY NAME
Contact Person: CONTACT PERSON
Contact Number: CONTACT NUMBER

1.3 Nature of Construction Activities

Describe the general scope of work for the project, phasing plan, seasons of construction activity etc.:
ENTER DESCRIPTION HERE

Indicate the type of construction activity:
☐ Residential ☐ Commercial ☐ Industrial ☐ Roadway ☐ Linear Utility
☐ Other (explain): _____

Estimated Project Start Date: Click here to enter a date.
Estimated Project Completion Date: Click here to enter a date.

1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

Describe the following (existing and proposed):

Soil Types:
ENTER DESCRIPTION HERE

Slope / Topography:
ENTER DESCRIPTION HERE

Drainage / Runoff Patterns:
ENTER DESCRIPTION HERE

Vegetation:
ENTER DESCRIPTION HERE

1.5 Construction Site Estimates

Provide an estimate of each of the following:

Total Project Area (Acres):	TOTAL AREA
Total Area Disturbed by Construction Activities (Acres):	DISTURBED AREA
Pre-Construction Impervious Area (%):	% IMPERVIOUS
Post-Construction Impervious Area (%):	% IMPERVIOUS

1.6 Receiving Waters

Indicate the water system that will receive project site runoff:

☐ Provo River ☐ Utah Lake ☐ Provo Bay

Indicate if any of the following drainage systems will receive project site runoff:

☐ Airport Moat ☐ Despain Ditch ☐ Golf Course Ponds ☐ Big Dry Creek
☐ Bullock Ditch ☐ Ironton Ditch ☐ Millrace ☐ Snyder Ditch

Describe the storm drainage systems that will convey site runoff to the ultimate outfall:
ENTER DESCRIPTION HERE

1.7 Sensitive Areas to be Protected

List unique or sensitive features that are to be preserved as part of the SWPPP:
ENTER LIST HERE

Describe measures to protect these features:
ENTER DESCRIPTION HERE

1.8 Potential Sources of Pollution

List sources that have the potential to discharge sediment to the storm drain system:
ENTER LIST HERE

List pollutants (other than sediment) that have the potential to pollute storm water runoff:
ENTER LIST HERE

1.9 Endangered Species

Are endangered or threatened species and / or critical habitats on or near the project area?

☐ YES ☐NO

Describe how this determination was made:
ENTER DESCRIPTION HERE

If YES, describe the species and / or critical habitat:
ENTER DESCRIPTION HERE

If YES, describe or make reference to documentation that determines the likely impact on identified species or habitat and the steps taken to mitigate the impact:
ENTER DESCRIPTION HERE

1.10 Historic Preservation

Are there any historic sites on or near the project area? ☐ YES ☐NO

Describe how this determination was made:
ENTER DESCRIPTION HERE

If YES, describe or make reference to documentation that determines the likely impact on the historic site and the steps taken to mitigate the impact:
ENTER DESCRIPTION HERE

1.11 Maps and Drawings

List all maps and drawings included with the SWPPP:
ENTER LIST HERE

SECTION 2: EROSION AND SEDIMENT CONTROL

2.1 Minimize Disturbed Areas and Protect Natural Features and Soil

PROVIDE NARRATIVE ON HOW OBJECTIVES OF THIS SECTION WILL BE ADDRESSED

2.2 Construction Phasing

Phase 1:

A. Describe Phase: ENTER DESCRIPTION HERE
B. Duration of Phase: Start: Click here to enter a date. End: Click here to enter a date.
C. List BMP's associated with this phase:
ENTER LIST HERE
D. Describe stabilization methods for this phase:
ENTER DESCRIPTION HERE

2.3 Control Storm Water Flowing Onto and Through the Project

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.4 Stabilize Soils

BMP: ENTER PROPOSED BMP HERE ☐ Permanent ☐Temporary

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.5 Slope Protection

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.6 Storm Drain Inlet Protection

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.7 Perimeter Control and Sediment Barriers

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.8 Sediment Retention

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.9 Stabilized Construction Exits

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

2.10 Additional BMP'S

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE

B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

SECTION 3: GOOD HOUSEKEEPING

3.1 Waste Management BMP'S

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

3.2 Material Staging / Storage BMP'S

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

3.3 Washout Area BMP'S

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

3.4 Vehicle and Equipment Fueling and Maintenance BMP'S

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

3.5 Spill Prevention and Control Plan

Describe or make reference to documentation that addresses the Spill Prevention and Control Plan:
ENTER DESCRIPTION OR REFERENCE HERE

3.6 Allowable Non-Storm Water Discharge Management

List allowable non-storm water discharges and the BMP's proposed to prevent the discharges from being contaminated:
ENTER LIST HERE

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

3.7 Additional BMP's

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

SECTION 4: POST-CONSTRUCTION

4.1 Post-Construction BMP's

BMP: ENTER PROPOSED BMP HERE

Will this BMP be operated / maintained by Provo City? ☐ YES ☐NO

Describe anticipated long-term inspection and maintenance requirements for this BMP:
ENTER DESCRIPTION HERE

SECTION 5: INSPECTIONS

5.1 Inspections

Inspection Personnel: IDENTIFY INSPECTION PERSONNEL AND DESCRIBE THEIR QUALIFICATIONS

Inspection Schedule and Procedures: DESCRIBE PROCEDURES FOR AND FREQUENCY OF INSPECTIONS FOR EACH BMP

5.2 Delegation of Authority

Duly Authorized Representative(s):

Company Name: COMPANY NAME
Name: NAME
Position: POSITION
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP
Mobile Number: MOBILE NUMBER

Email Address: EMAIL ADDRESS

SECTION 6: RECORDKEEPING AND TRAINING

6.1 Recordkeeping

Required Logs: The following logs are required to be maintained, as part of this SWPPP, and are found in the Appendix:

- Inspection Log
- Corrective Action Log
- Major Grading Activities Log
- Log of Changes to the SWPPP
- Training Log

6.2 Training

Individual(s) Responsible for Training:

Company Name: COMPANY NAME
Name: NAME
Position: POSITION
Address: STREET ADDRESS
City, State Zip: CITY, STATE ZIP
Mobile Number: MOBILE NUMBER
Email Address: EMAIL ADDRESS

SECTION 7: FINAL STABLIZATION

7.1 Final Stabilization BMP's

BMP: ENTER PROPOSED BMP HERE

A. Describe BMP: ENTER DESCRIPTION HERE
B. General Installation Timeframe: ENTER INSTALLATION TIMEFRAME HERE
C. Maintenance and Inspection Plan: ENTER M & I PLAN HERE
D. Responsible Staff: ENTER RESPONSIBLE STAFF HERE

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am completely aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

Instructions

To help you develop the narrative section of your construction site SWPPP, the DWQ has modified the U.S Environmental Protection Agency (EPA) electronic SWPPP template to fit the needs of NOI applicants in Utah. The template is designed to help guide you through the SWPPP development process and help ensure that your SWPPP addresses all the necessary elements stated in your construction general permit. It may be helpful to use this template with EPA's guidance on *Developing Your Storm Water Pollution Prevention Plan*. Both are available on EPA's website at www.epa.gov/npdes/swpppguide.

This template covers most of the SWPPP elements that the Utah construction general permit requires; however, you are strongly encouraged to customize this template. There are two major reasons to customize this template:

- **To reflect the terms and conditions of the State construction general permit; and**
- **To reflect the conditions at your site**

Using the SWPPP Template

Each section of this template includes "instructions" and space for project information. You should read the instructions for each section before you complete that section. This template was developed in Word so that you can easily add tables and additional text. Some sections may require only a brief description while others may require several pages of explanation.

Tips for completing the SWPPP template

- If there is more than one construction operator for your project, consider coordinating development of your SWPPP with other operators.
- Multiply Multiple operators may share the same SWPPP, but make sure that responsibilities are clearly described.
- Modify this SWPPP template so that it addresses the requirements in your construction general permit and meets the needs of your project. Consider adding permit citations in the SWPPP when you address a specific permit requirement.

Storm Water Pollution Prevention Plan for:

PROJECT NAME
PROJECT ADDRESS

Contractor:

COMPANY NAME
COMPANY ADDRESS
COMPANY CITY, STATE, ZIP
COMPANY TELEPHONE NUMBER

SWPPP Contact:

NAME OF PERSON RESPONSIBLE FOR SWPPP MANAGEMENT
TELEPHONE NUMBER
EMAIL ADDRESS
COMPANY NAME
COMPANY ADDRESS
COMPANY CITY, STATE, ZIP
COMPANY TELEPHONE NUMBER

SWPPP Preparation Date:

MONTH DAY, YEAR

Estimated Project Dates:

Project Start Date: Click here to enter a date.
Project End Date: Click here to enter a date.

Table of Contents

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING .....

1.1 Project / Site Information .....
1.2 Responsible Parties.....
1.3 Nature of Construction Activities .....
1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns .....
1.5 Construction Site Estimates.....
1.6 Receiving Waters .....
1.7 Sensitive Areas to be Protected .....
1.8 Potential Sources of Pollution .....
1.9 Endangered Species.....
1.10 Historic Preservation .....
1.11 Maps and Drawings .....

SECTION 2: EROSION AND SEDIMENT CONTROL.....

2.1 Minimize Disturbed Areas and Protect Natural Features and Soil .....
2.2 Construction Phasing.....
2.3 Control Storm Water Flowing Onto and Through the Project .....
2.4 Stabilize Soils .....
2.5 Slope Protection .....
2.6 Storm Drain Inlet Protection .....
2.7 Perimeter Control and Sediment Barriers .....
2.8 Sediment Retention.....
2.9 Stabilized Construction Exits .....
2.10 Additional BMP's .....

SECTION 3: GOOD HOUSEKEEPING.....

3.1 Waste Management BMP's .....
3.2 Material Staging / Storage BMP's.....
3.3 Washout Area BMP's.....
3.4 Vehicle and Equipment Fueling and Maintenance BMP's.....
3.5 Spill Prevention and Control.....
3.6 Allowable Non-Storm Water Discharge Management.....
3.7 Additional BMP's .....

SECTION 4: FINAL STABILIZATION.....

4.1 Final Stabilization BMP's.....

SECTION 5: POST-CONSTRUCTION .....
5.1 Post-Construction BMP's .....

SECTION 6: INSPECTIONS .....
6.1 Inspections .....
6.2 Delegation of Authority .....

SECTION 7: RECORDKEEPING AND TRAINING .....
7.1 Recordkeeping .....
7.2 Training .....

SECTION 8: CERTIFICATION AND NOTIFICATION .....

SWPPP APPENDICES .....
Appendix A – SWPPP Maps

Appendix B – NOI from the State of Utah

Appendix C – Inspection Reports

Appendix D – Corrective Action Log

Appendix E – Major Grading and Stabilization Activities Log

Appendix F – SWPPP Amendment Log

Appendix G – Onsite SWPPP Training

Appendix H – Subcontractor Agreements / Certifications

Appendix I – Delegation of Authority

Appendix J – Additional Information (Endangered Species, Historic Preservation, Misc. Permits, Spill Prevention & Control, etc.)

Appendix K – BMP Specifications

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING CERTIFICATION, AND SIGNATURE

1.1 Project/Site Information

Instructions:

- In this section, you can gather some basic site information that will be helpful to you later when you file for permit coverage.
- For more information, see *Developing Your Storm Water Pollution Prevention Plan: A SWPPP Guide for Construction Sites* (also known as the *SWPPP Guide*), Chapter 2
- Detailed information on determining your site's latitude and longitude can be found at www.epa.gov/npdes/stormwater/latlong

1.2 Contact Information/Responsible Parties

Instructions:

- List the operator(s), project managers, storm water contact(s), and person or organization that prepared the SWPPP. Indicate respective responsibilities, where appropriate.
- Also, list subcontractors expected to work on-site. Notify subcontractors of storm water requirements applicable to their work.
- See *SWPPP Guide*, Chapter 2.B.

1.3 Nature and Sequence of Construction Activity

Instructions:

- Briefly describe the nature of the construction activity and approximate time frames (one or more paragraphs, depending on the nature and complexity of the project).
- For more information, see *SWPPP Guide*, Chapter 3.A.

1.4 Soils, Slopes, Vegetation, and Current Drainage Patterns

Instructions:

- Describe the existing soil conditions at the construction site including soil types, slopes and slope lengths, drainage patterns, and other topographic features that might affect erosion and sediment control.
- Also, note any historic site contamination evident from existing site features and known past usage of the site.
- This information should also be included on your site maps (See *SWPPP Guide*, Chapter 3.C.).
- For more information, see *SWPPP Guide*, Chapter 3.A.

1.5 Construction Site Estimates

Instructions:

- Estimate the area to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas.
- Calculate the percentage of impervious surface area before and after construction
- Calculate the runoff coefficients before and after construction.
- For more information, see *SWPPP Guide*, Chapter 3.A and Appendix C.

1.6 Receiving Waters

Instructions:

- List the water body(s) that would receive storm water from your site, including streams, rivers, lakes, and wetlands. Describe each as clearly as possible, such as Big Cottonwood Creek, *a tributary to the Jordan River*, and so on.
- Indicate the location of all waters, including wetlands, on the site map.
- Note any stream crossings, if applicable.
- List the storm sewer system or drainage system that storm water from your site could discharge to and the water body(s) that it ultimately discharges to.
- If any of the water bodies above are impaired and/or subject to Total Maximum Daily Loads (TMDLs), please list the pollutants causing the impairment and any specific requirements in the TMDL(s) that are applicable to construction sites. Your SWPPP should specifically include measures to prevent the discharge of these pollutants.
- For more information, see *SWPPP Guide*, Chapter 3.A and 3.B.
- Also, for more information and a list of TMDL contacts and links by state, visit www.epa.gov/npdes/stormwater/tmdl.

1.7 Site Features and Sensitive Areas to be Protected

Instructions:

- Describe unique site features including streams, stream buffers, wetlands, specimen trees, natural vegetation, steep slopes, or highly erodible soils that are to be preserved.
- Describe measures to protect these features.
- Include these features and areas on your site maps.
- For more information, see *SWPPP Guide*, Chapter 3.A and 3.B.

1.8 Potential Sources of Pollution

Instructions:

- Identify and list all potential sources of sediment, which may reasonably be expected to affect the quality of storm water discharges from the construction site.
- Identify and list all potential sources of pollution, other than sediment, which may reasonably be expected to affect the quality of storm water discharges from the construction site.
- For more information, see *SWPPP Guide*, Chapter 3.A.

1.9 Endangered Species Certification

Instructions:

- Before beginning construction, determine whether endangered or threatened species or their critical habitats are on or near your site. For help to determine this you may wish to call the Dept of Natural Resources, Div. of Wildlife Resources at 801-538-4700 or call US Fish & Wildlife at 801-975-3330.
- Adapt this section as needed for state or tribal endangered species requirements and, if applicable, document any measures deemed necessary to protect endangered or threatened species or their critical habitats.
- For more information on this topic, see *SWPPP Guide*, Chapter 3.B.
- Additional information on Endangered Species Act (ESA) provisions is at www.epa.gov/npdes/stormwater/esa

1.10 Historic Preservation

Instructions:

- Before you begin construction, you should review federal and any applicable state, local, or tribal historic preservation laws and determine if there are historic sites on or near your project. If so, you might need to make adjustments to your construction plans or to your storm water controls to ensure that these historic sites are not damaged.
- For more information, see *SWPPP Guide*, Chapter 3.B or contact your state or tribal historic preservation officer, or visit EPA's website http://cfpub.epa.gov/npdes/stormwater/swppp.cfm#template for examples.

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

Instructions:

- Describe the BMPs that will be implemented to control pollutants in storm water discharges. For each major activity identified, do the following:
  - Clearly describe appropriate control measures.
  - Describe the general sequence during the construction process in which the measures will be implemented.
  - Describe the maintenance and inspection procedures that will be used for that specific BMP.
  - Include protocols, thresholds, and schedules for cleaning, repairing, or replacing damaged or failing BMPs.
  - Identify staff responsible for maintaining BMPs.
  - (If your SWPPP is shared by multiple operators, indicate the operator responsible for each BMP.)
- Categorize each BMP under one of the following 10 areas of BMP activity as described below:

2.1 Minimize disturbed area and protect natural features and soil

2.2 Phase Construction Activity

2.3 Control Storm Water flowing onto and through the project

2.4 Stabilize Soils

2.5 Protect Slopes

2.6 Protect Storm Drain Inlets

2.7 Establish Perimeter Controls and Sediment Barriers

2.8 Retain Sediment On-Site and Control Dewatering Practices

2.9 Establish Stabilized Construction Exits

2.10 Any Additional BMPs

- Note the location of each BMP on your site map(s).
- For any structural BMPs, you should provide design specifications and details and refer to them. Attach them as appendices to the SWPPP or within the text of the SWPPP.
- For more information, see *SWPPP Guide*, Chapter 4.
- Consult your state's design manual or one of those listed in Appendix D of the *SWPPP Guide*.
- For more information or ideas on BMPs, see EPA's National Menu of BMPs http://www.epa.gov/npdes/stormwater/menuofbmps

2.1 Minimize Disturbed Area and Protect Natural Features and Soil

Instructions:

- Describe the areas that will be disturbed with each phase of construction and the methods (e.g., signs, fences) that you will use to protect those areas that should not be disturbed. Describe natural features identified earlier and how each will be protected during construction activity. Also describe how topsoil will be preserved. Include these areas and associated BMPs on your site map(s) also. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 1.)
- Also, see EPA's *Preserving Natural Vegetation BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/perserve_veg

2.2 Phase Construction Activity

Instructions:

- Describe the intended construction sequencing and timing of major activities, including any opportunities for phasing grading and stabilization activities to minimize the overall amount of disturbed soil that will be subject to potential erosion at one time. Also, describe opportunities for timing grading and stabilization so that all or a majority of the soil disturbance occurs during a time of year with less erosion potential (i.e., during the dry or less windy season). (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 2.) It might be useful to develop a separate, detailed site map for each phase of construction.
- Also, see EPA's *Construction Sequencing BMP Fact Sheet* at http://www.epa.gov/npdes/stormwater/menuofbmps/construction/cons_seq)

2.3 Control Storm Water flowing onto and through the Project

Instructions:

- Describe structural practices (e.g., diversions, berms, ditches, storage basins) including design specifications and details used to divert flows from exposed soils, retain or detain flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 3.)

2.4 Stabilize Soils

Instructions:

- Describe controls (e.g., interim seeding with native vegetation, hydro seeding) to stabilize exposed soils where construction activities have temporarily or permanently ceased. Also describe measures to control dust generation. Avoid using impervious surfaces for stabilization whenever possible. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 4.)
- Also, see EPA's *Seeding BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/seeding

2.5 Protect Slopes

Instructions:

- Describe controls (e.g., erosion control blankets, tackifiers) including design specifications and details that will be implemented to protect all slopes. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 5.)
- Also, see EPA's *Geotextiles BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/geotextiles

2.6 Protect Storm Drain Inlets

Instructions:

- Describe controls (e.g., inserts, rock-filled bags, or block and gravel) including design specifications and details that will be implemented to protect all inlets receiving storm water from the project during the entire project. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 6.)
- Also, see EPA's *Storm Drain Inlet Protection BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/storm_drain

2.7 Establish Perimeter Controls and Sediment Barriers

Instructions:

- Describe structural practices (e.g., silt fences or fiber rolls) including design specifications and details to filter and trap sediment before it leaves the construction site. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 7.)
- Also see, EPA's *Silt Fence BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/silt_fences, or *Fiber Rolls BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/fiber_rolls

2.8 Retain Sediment On-Site

Instructions:

- Describe sediment control practices (e.g., sediment trap or sediment basin), including design specifications and details (volume, dimensions, outlet structure) that will be implemented at the construction site to retain sediments on-site. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 8.)

- Also, see EPA's *Sediment Basin BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/sediment_basins

2.9 Establish Stabilized Construction Exits

Instructions:

- Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (e.g., vehicle tracking), and stabilization practices (e.g., stone pads or wash racks or both) to minimize off-site vehicle tracking of sediments and discharges to storm water. (For more information, see *SWPPP Guide*, Chapter 4, ESC Principle 9.)
- Also, see EPA's *Construction Entrances BMP Fact Shee*t at www.epa.gov/npdes/stormwater/menuofbmps/construction/cons_entrance

2.10 Additional BMPs

Instructions:

- Describe additional BMPs that do not fit into the above categories.

SECTION 3: GOOD HOUSEKEEPING BMPS

Instructions:

- Describe the key good housekeeping and pollution prevention (P2) BMPs that will be implemented to control pollutants in storm water.
- Categorize each good housekeeping and pollution prevention (P2) BMP under one of the following seven categories:
  - ***3.1 Material Handling and Waste Management***
  - ***3.2 Establish Proper Building Material Staging Areas***
  - ***3.3 Designate Washout Areas***
  - ***3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices***
  - ***3.5 Allowable Non-Storm water Discharges and Control Equipment/Vehicle Washing***
  - ***3.6 Spill Prevention and Control Plan***
  - ***3.7 Any Additional BMPs***
- For more information, see *SWPPP Guide*, Chapter 5.
- Consult your state's design manual or resources in Appendix D of the *SWPPP Guide*.
- For more information or ideas on BMPs, see EPA's National Menu of BMPs http://www.epa.gov/npdes/stormwater/menuofbmps

3.1 Material Handling and Waste Management

Instructions:

- Describe measures (e.g., trash disposal, sanitary wastes, recycling, and proper material handling) to prevent the discharge of solid materials to receiving waters, except as authorized by a permit issued under section 404 of the CWA (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 1.)

- Also, see EPA's *General Construction Site Waste Management BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/cons_wasteman

3.2 Establish Proper Building Material Staging Areas

Instructions:

- Describe construction materials expected to be stored on-site and procedures for storage of materials to minimize exposure of the materials to storm water. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 2.)

3.3 Designate Washout Areas

Instructions:

- Describe location(s) and controls to eliminate the potential for discharges from washout areas for concrete mixers, paint, stucco, and so on. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 3.)
- Also, see EPA's *Concrete Washout BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/concrete_wash

3.4 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

Instructions:

- Describe equipment/vehicle fueling and maintenance practices that will be implemented to control pollutants to storm water (e.g., secondary containment, drip pans, and spill kits) (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 4.)
- Also, see EPA's *Vehicle Maintenance and Washing Areas BMP Fact Sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/vehicile_maintain

3.5 Spill Prevention and Control Plan

Instructions:

- Describe the spill prevention and control plan to include ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control. (For more information, see *SWPPP Guide*, Chapter 5, P2 Principle 6.)

- Also, see EPA's *Spill Prevention and Control Plan BMP Fact sheet* at www.epa.gov/npdes/stormwater/menuofbmps/construction/spill_control

3.7 Allowable Non-Storm water Discharge Management

Instructions:

- Identify all allowable sources of non-storm water discharges that are not identified. The allowable non-storm water discharges identified might include the following (see your permit for an exact list):
  - Waters used to wash vehicles where detergents are not used
  - Water used to control dust
  - Potable water including uncontaminated water line flushing
  - Routine external building wash down that does not use detergents
  - Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
  - Uncontaminated air conditioning or compressor condensate
  - Uncontaminated ground water or spring water
  - Foundation or footing drains where flows are not contaminated with process materials such as solvents
  - Uncontaminated excavation dewatering
  - Landscape irrigation
- Identify measures used to eliminate or reduce these discharges and the BMPs used to prevent them from becoming contaminated.
- For more information, see *SWPPP Guide*, Chapter 3.A.

SECTION 4: SELECTING POST-CONSTRUCTION BMPs

4.1 Post-Construction BMP's

Instructions:

- Describe all post-construction storm water management measures that will be installed during the construction process to control pollutants in storm water discharges after construction operations have been completed. Examples of post-construction BMPs include the following:
  - Bio filters
  - Detention/retention devices
  - Earth dikes, drainage swales, and lined ditches
  - Infiltration basins
  - Porous pavement
  - Other proprietary permanent structural BMPs
  - Outlet protection/velocity dissipation devices

  - Slope protection
  - Vegetated strips and/or swales
- Identify any applicable federal, state, local, or tribal requirements for design or installation.
- Describe how low-impact designs or smart growth considerations have been incorporated into the design.
- For any structural BMPs, you should have design specifications and details and refer to them. Attach them as appendices to the SWPPP or within the text of the SWPPP.
- For more information on this topic, see your state's storm water manual.
- You might also want to consult one of the references listed in Appendix D of the *SWPPP Guide*.
- Visit the post-construction section of EPA's Menu of BMPs at: www.epa.gov/npes/menuofbmps

SECTION 5: INSPECTIONS

5.1 Inspections

Instructions:

- Identify the individual(s) responsible for conducting inspections and describe their qualifications. Reference or attach the inspection form that will be used.
- Describe the frequency that inspections will occur at your site including any correlations to storm frequency and intensity.
- Note that inspection details for particular BMPs should be included in Sections 2 and 3.
- You should also document the repairs and maintenance that you undertake as a result of your inspections. These actions can be documented in the corrective action log described in Part 5.3 below.
- For more on this topic, see *SWPPP Guide*, Chapters 6 and 8.
- Also, see suggested inspection form in Appendix B of the *SWPPP Guide*.

5.2 Delegation of Authority

Instructions:

- Identify the individual(s) or specifically describe the position where the construction site operator has delegated authority for the purposes of signing inspection reports, certifications, or other information.
- Attach the delegation of authority form that will be used.
- For more on this topic, see *SWPPP Guide*, Chapter 7.

5.3 Corrective Action Log

Instructions:

- Create here, or as an attachment, a corrective action log. This log should describe repair, replacement, and maintenance of BMPs undertaken as a result of the inspections and maintenance

procedures described above. Actions related to the findings of inspections should reference the specific inspection report.

- This log should describe actions taken, date completed, and note the person that completed the work.

SECTION 6: RECORDKEEPING AND TRAINING

6.1 Recordkeeping

Instructions:
The following is a list of records you should keep at your project site available for inspectors to review:

- Dates of grading, construction activity, and stabilization (which is covered in Sections 2 and 3)
- A copy of the construction general permit (attach)
- The signed and certified NOI form or permit application form (attach)
- A copy of the letter from EPA or/the state notifying you of their receipt of your complete NOI/application (attach)
- Inspection reports (attach)
- Records relating to endangered species and historic preservation (attach)
- Check your permit for additional details
- For more on this subject, see *SWPPP Guide*, Chapter 6.C.

6.2 Log of Changes to the SWPPP

Instructions:

- Create a log here, or as an attachment, of changes and updates to the SWPPP. You should include additions of new BMPs, replacement of failed BMPs, significant changes in the activities or their timing on the project, changes in personnel, changes in inspection and maintenance procedures, updates to site maps, and so on.

6.3 Training

Instructions:

- Training your staff and subcontractors is an effective BMP. As with the other steps you take to prevent storm water problems at your site, you should document the training that you conduct for your staff, for those with specific storm water responsibilities (e.g. installing, inspecting, and maintaining BMPs), and for subcontractors.
- Include dates, number of attendees, subjects covered, and length of training.
- For more on this subject, see *SWPPP Guide*, Chapter 8.

SECTION 7: FINAL STABILIZATION

7.1 Final Stabilization

Instructions:

- Describe procedures for final stabilization. If you complete major construction activities on part of your site, you can document your final stabilization efforts for that portion of the site. Many permits will allow you to then discontinue inspection activities in these areas (be sure to check your permit for exact requirements). You can amend or add to this section as areas of your project are finally stabilized.
- Update your site plans to indicate areas that have achieved final stabilization.
- Note that dates for areas that have achieved final stabilization should be included in Section 6, Part 6.1 of this SWPPP.
- For more on this topic, see *SWPPP Guide*, Chapter 9.

SECTION 8: CERTIFICATION

8.1 Certification

Instructions:

- The SWPPP should be signed and certified by the construction operator(s). Attach a copy of the NOI and a copy of the General Storm Water Permit for Construction Activity. You can get a copy of the General Storm Water Permit for Construction Activity on the same web page that this template was obtained (www.waterquality.utah.gov/UPDES/stormwatercon.htm)

SECTION 9:

9.1 SWPPP Appendices

Instructions:

- A SWPPP Plan is an ever-evolving document with continual amendments being made to various reports and logs. The following is a list of recommended appendices to be included in the SWPPP:

  Appendix A – SWPPP Maps
  Appendix B – NOI from the State of UT
  Appendix C – Inspection Reports
  Appendix D – Corrective Action Log
  Appendix E – Major Grading and Stabilization Activities Log
  Appendix F – SWPPP Amendment Log
  Appendix G – Onsite SWPPP Training
  Appendix H – Subcontractor Agreements / Certifications
  Appendix I – Delegation of Authority
  Appendix J – Additional Information (Endangered Species, Historic Preservation, Misc. Permits, Spill Prevention & Control, etc.)

Appendix K – BMP Specifications

STORM WATER POLLUTION PREVENTION PLAN

FOR

[PROJECT]

APPENDIX A

SWPPP MAPS

STORM WATER POLLUTION PREVENTION PLAN

FOR

[PROJECT]

APPENDIX B

NOI FROM STATE OF UTAH

STORM WATER POLLUTION PREVENTION PLAN

FOR

[PROJECT]

APPENDIX C

INSPECTION FORMS

STORM WATER POLLUTION PREVENTION PLAN

FOR

[PROJECT]

APPENDIX D

CORRECTIVE ACTION LOG

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/ Responsible Person

Date Grading Activity Initiated	Description of Grading Activity	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures are Initiated	Description of Stabilization Measure and Location

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix G – *Sample* Onsite SWPPP Training

Storm Water Pollution Prevention Training Log

SWPPP Appendix G - *Sample* SWPPP Training Log
Project Name:
SWPPP Contact:

Project Name:
Project Location:
Instructor's Name(s):
Instructor's Title(s):

Course Location:
Course Length (hours):
Storm Water Training Topic: (check as appropriate)

- ☐ Erosion Control BMPs
- ☐ Sediment Control BMPs
- ☐ Non-Storm Water BMPs
- ☐ Emergency Procedures
- ☐ Good Housekeeping BMPs

Specific Training Procedures:

Attendee Roster: (attach additional pages as necessary)

No.	Name of Attendee	Company
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Storm Water Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact storm water must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

_____

_____

Signature: _____

Title: _____

Date: _____

Appendix I – *Sample* Delegation of Authority Form

Project Name:

SWPPP Contact:

Delegation of Authority

I, _____(name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the _____ construction site. The designee is authorized to sign any reports, storm water pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in _____(Reference State Permit), and that the designee above meets the definition of a "duly authorized representative" as set forth in _____ (Reference State Permit).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

SWPPP COMPLIANCE INSPECTION FORM

provo PUBLIC WORKS STORM WATER

Project Name: _____ Address: _____ Date _____

Owner: _____ Contractor (Gen/Sub): _____ Start time: _____

Site Contact: _____ Phone: _____ Stop Time: _____

UPDES Permit #: _____ Expiration: _____ Weather: ☐ Sunny ☐ Cloudy ☐ Raining ☐ Snowing Other _____

Date of last rain event: _____ Duration: _____ Approx. Rainfall (in): _____

Inspected By (Print): _____ Local Jurisdiction or County: _____

Reason for Inspection: ☐ Scheduled ☐ Complaint/Tip ☐ Random Receiving Waters: _____

☐ SW sampling ☐ SW non-sampling Inspector's Email _____

Operator's Email _____

SWPPP, EROSION, SEDIMENT AND HOUSEKEEPING BMP's INFORMATION	YES	NO	N/A
1. Is the SWPPP on site and accessible, or is the SWPPP location posted in an obvious place and reasonably accessible (in a short time)?	☐	☐	☐
2. Are erosion control, sediment control, and good housekeeping BMP's installed on the site as shown in the SWPPP?	☐	☐	☐
3. Has the SWPPP been updated to reflect the current site conditions (modifications dated & initialed on site map, new BMPs on site map, discontinued BMPs crossed off site map, new BMP details & spec's in SWPPP, SWPPP amendment Log, etc.)?	☐	☐	☐
4. Are on-site inspections being performed and recorded by a qualified person on a weekly or biweekly basis, reporting items required by permit? (Inspector name &qualifications, weather, problems/repairs, corrective action, new BMPs, removed BMPs discharges, etc.)	☐	☐	☐
5. Have all corrective action items from previous inspections been addressed and documented within the time frame allotted by the inspector?	☐	☐	☐
6. Are SW flows entering and leaving the construction site controlled, managed, or diverted around the site? (e.g. perimeter controls, berms, silt fence, upgradient boundary diversion, down gradient boundary sediment control, etc.)	☐	☐	☐
7. Is there evidence of sediment discharge such as mud flows or soil deposits from the construction site in downstream locations?	☐	☐	☐
8. Is there evidence of vehicles tracking soil off the construction site?	☐	☐	☐
9. Is there soil, construction material, landscaping items, or other debris piled on impervious surfaces (roads, drives) that could be washed with SW to a storm drain or water body?	☐	☐	☐
10. Is there a need to repair, maintain, or improve erosion control BMPs (temporary stabilization, erosion blankets, mulch, vegetated strips, rip rap, surface roughening, pipe slope drain, dust control, etc)?	☐	☐	☐
11. Is there a need to repair, maintain, or improve sediment control BMPs (silt fence, check dams, fiber rolls, sediment trap/basin, inlet protection, waddles, straw bails, curb cut-back, etc?	☐	☐	☐
12. Is there a need to repair, maintain, or improve good housekeeping controls (clean track out pad, sweeping, construction materials management, litter/trash control, port-o-potties staked down, fueling areas, concrete wash out area, proper curb ramps, spill prevention, etc)?	☐	☐	☐
13. Are there disturbed areas that have not had construction activities for 14 to 21 days without stabilization? (except snow or frozen ground)?	☐	☐	☐
14. Are there places where BMPs are needed and should be installed or not needed and should be removed?	☐	☐	☐

COMMENTS AND CORRECTIVE ACTIONS FOR SWPPP COMPLIANCE

Identify the problem and its location. If appropriate, describe (in general terms) what needs to be completed. However, only if qualified (e.g., you are a designer) should you be mandating specific BMPs to install. Include the date when corrections are made.

_____

_____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of.fine and imprisonment for knowing violations.

Inspector, please list all applicable SEV codes _____ _____ _____ _____ _____ _____ _____ _____ Date ☐

City Inspector (*Print Name*) ☐ Signature ☐

Operator: (*Print Name*) ☐ Signature ☐

ADDITIONAL COMMENTS AND CORRECTIVE ACTIONS FOR SWPPP COMPLIANCE

Site Name: _____ Date: _____

Site Address: _____

EPA Form 3560-3 SEV Codes and Descriptions

DOR11	☐ Discharge without a permit	BR19B	☐ Failure to properly operate and maintain BMP's
DOR18	☐ Failure to apply for a Notice of Termination	BR19A	☐ Failure to properly install/implement BMP's
BOR12	☐ Failure to conduct inspections	EOR16	☐ Failure to submit required report (non-DMR)
BOC17	☐ Failure to develop any or adequate SWPPP/SWMP	AOR22	☐ Narrative effluent violation
BOC18	☐ Failure to implement SWPPP/SWMP	DOR12	☐ Failure to submit required permit information
BOR41	☐ Failure to maintain records	AOR12	☐ Numeric effluent violation
COR11	☐ Failure to monitor	BOR42	☐ Violation of a milestone in an order

Storm Water Pollution Prevention Plan Construction Activity Template ≥ 1 ACRE

Permit #_____

Date:_____

Project Name: _____

Project Address: _____

Owner's Name & Address: _____

E-mail Address: _____ Phone: _____

Contractor's Name & Address: _____

E-mail Address: _____ Phone: _____

SWPPP Contact Name & Address: _____

E-mail Address: _____ Phone: _____

Total square feet of project area: _____

Please provide the following

☐ SWPPP (For land disturbance activities that disturb an area greater than 1 acre or are part of a common plan of development) use the required State of Utah SWPPP template.
http://www.deq.utah.gov/Permits/water/updes/stormwater.htm

☐ NOI (Notice of Intent) (For land disturbance activities that disturb an area greater than 1 acre) filed with the Department of Environmental Quality. You must first create an "Utah.gov" account and then "login" to the database once the template is completed then file for the Notice of Intent (NOI).
http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm#app

☐ Utah Division of Environmental Quality General Permit No. UTR000000.
http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm#app

☐ SWPPP drawing with BMP locations and BMP detail sheet.

☐ Spill Prevention control and countermeasure plan. (SPCC)
Copies of any Federal or State permits required for the project.
(e.g. wetlands, stream alteration, dewatering, etc.)

Construction Site Dewatering

State law prohibits point source discharges to a water body(ies) of the State without a Utah Pollution Discharge Elimination System (UPDES) permit. The operator of construction dewatering or hydrostatic testing activity that has such a discharge must submit a NOI to obtain coverage under the UPDES General Permit for Construction Dewatering/Hydrostatic Testing. If you have questions about whether you need a permit under the UPDES program contact the Division of Water Quality at (INSERT CONTACT NUMBER)

Is the project going to generate any non-storm water discharge? ☐ YES ☐ NO
If yes, please submit the required documents with this form.

Stream Alteration

Utah Code requires any person, government agency, or other organization wishing to alter the bed or banks of a natural stream to obtain written authorization from the State Engineer prior to beginning work. For more information visit www.nrwt1.nr.state.ut.us.

Is the project going to alter any stream or water body(ies)? ☐ YES ☐ NO
If yes, please submit the required documents with this form.

Wetlands

The Clean Water Act (CWA) establishes a program that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Please visit US Army Corp of Engineers webpage for more information. www.nwo.usace.army.mil/html/od-tl/tri-lakes.html

Are wetlands going to be disturbed during the project? ☐ YES ☐ NO
If yes, please submit the required documents with this form.

Common Plan of Development (CPoD)

A common plan of development or "sale" is a site where multiple separate and distinct construction activities may be taking place at different times on different schedules; however, each lot that will be sold is required to have its own SWPPP.

☐ For sites that are part of a common plan of development or small than 1 acre, use the CPoD Template found at www.provo.org. or call 801-420-6698

SWPPP Sign Requirements

☐ *Projects over 1 acre:* The permittee must post a sign within 7 days of the issue date on this permit. The following must be posted near the main entrance to the project site, the SWPPP map, and the current NOI.

Sign Information:

Exterior grade ¾" Plywood cut 4'x4', with red letters, white background, and must include the following text.

SWPPP
A Storm Water Pollution Prevention Plan covers this construction site.
If any non-storm water discharge or severe vehicle tracking occurs please call (801) 420-6698.

Example of the Main Entrance sign

SWPPP sign requirements for all secondary entrances. The sign must be 18"x24" and must include the following text (letters must be 2" tall and red in color).

Sign Information:

SWPPP
A Storm Water Pollution Prevention Plan covers this construction site.
If any non-storm water discharge or severe vehicle tracking occurs please call (801) 420-6698.

Control Measures

The proposed control measures shall be designed to prevent or minimize, to the maximum extent practicable, the discharge of sediment, debris and other construction-related pollutants from the construction site by storm water runoff into the storm drainage system.

Check each item that you will use. Many items are mandatory; initial those to verify that you have read them and will comply.

Include additional sheets if necessary
Initials

_____ No dirt or debris placed on the roadways, sidewalk and curb (Mandatory).

_____ If using chemical toilets, it must be place minimum of 6' away from impervious surfaces (e.g. roadways, sidewalk, and curb) and staked down to prevent tipping (Mandatory).

_____ Concrete washout/collection containment area is installed (Mandatory).

All other potential access points will be eliminated or controlled by:

(Please check all that apply)

☐ Sign ☐ Silt Fence Barrier ☐ Temporary Fencing

Other (Describe) _____

Potential soil erosion and storm water runoff will be controlled by:

(Please check all that apply)

☐ Erosion control blankets ☐ Limiting area of disturbance

☐ Re-vegetation of un-stabilized area ☐ Gravel wattle check dam

☐ Silt fences ☐ Bonded fiber matrix

☐ Retention Areas Other _____

Job access area street tracking to be eliminated by:

(Please check all that apply)

☐ Broom and shovel provided for immediate cleanup (mandatory) ☐ Stabilized construction entrance

☐ Wash down pad Other _____

Use Site Maps to Track Progress

Keep up-to date site maps showing BMP's that change frequently in location as the work on a construction site progresses. Your permit requires that you keep your SWPPP up to-date, so make up the side map with the location of the BMPs.

SWPPP Team

Each owner/operator must assemble a storm water team. The team will be responsible for overseeing the development of the SWPPP. The team is responsible for compliance and requirements of the SWPPP.

Please list the name and number for the following:

Emergency Contact _____

SWPPP Team Members

_____ _____

_____ _____

_____ _____

_____ _____

Construction Site

☐ Attach a list of pollutant generating activities for the construction site.

☐ Treatment chemicals will be used on site? If so you must provide an approval letter from the DWQ.

☐ Site is within 50' of surface water? If so the proper Buffer Documentation will be required

_____ Staff training will be done according to the General Construction Permit.

_____ The SWPPP will stay onsite/online and be available within 30 minutes.

Notice of Violation

Whenever the City finds that a person has violated a prohibition or failed to comply with a requirement of the permit, the City will order compliance by written notice of violation to the responsible person. Such notice may be required without limitations of verbal warning with corrections and/or monetary citation.

Violations and Enforcement

- The violation of any of the provisions to this Article shall be a Class C misdemeanor. Each day that a violation occurs shall constitute a separate offense. Each violation/infraction is considered a separate offence each day.
- Authorized code enforcement personnel working under the direction of the Public Works Department Director and/or Development of Services Department Director are hereby declared to be Public Officials within the meaning of Section 77-7-18 Utah Code as amended, and these Public Officials are hereby authorized to issue misdemeanor citations and/or stop work order for violations of this Chapter.
- Violators of the Article are also subject to any penalties that may be imposed by the State of Utah, under the authority of the Utah Water Quality Act, Title 19, and Chapter 5 of the Utah Code.
- In addition to any criminal fines and/or penalties which may be assessed for a violation of this Article, the City shall have the right to install and/or maintain appropriate erosion and sediment control measures on any site which is required to have such measures. In the event that construction activity is commenced or continued without such measures having been installed as required by this Article, the City shall have the right to have such measures installed or maintained by City personnel or to hire a private contractor to perform such work. The contractor and/or the property owner shall be liable for any and all expenses related to performing such work plus a 25% penalty charge. The City may assess said charges against the bond posted by the contractor and/or property owner and/or developer.
- Violators of this Article may also be subject to prosecution, fines and penalties from the State of Utah and the United States EPA.

Terminating Coverage (NOT)

Operators wishing to terminate coverage under this permit must submit a Notice of Termination (NOT) found in the addendum section in the Utah State **Storm Water General Permit for Construction Activities. www.deq.utah.gov/Permits/water/updes/stormwatercon.htm#not**

Storm Water Pollution Prevention Plan Construction Activity Template will not be considered terminated until the Permittee submits a Notice of Termination to the Division of Water Quality and the Notice is accepted by the City. The City shall accept the Notice if the Permittee has met the requirements of the Permit. The Permittee shall keep and maintain all Permit-required improvements on the site until the City accepts the NOT.

All Permittees must submit a NOT within thirty (30) days after completion of their construction activities and final stabilization of their portion of the site, or another operator taking over all of their responsibilities at the site. A Permittee cannot submit an NOT without final stabilization unless another party has agreed to and filled a Notice of Intent (NOI) to assume responsibility for final stabilization of the site. Appropriate enforcement actions may be taken for permit violations where a Permittee submits a NOT but the Permittee has not transferred operational control to another Permittee or the site has not undergone final stabilization. **If Permittee is developing the property and it planning to sell individual lots then it will be the responsibility of the Permittee to legally transfer the SWPPP portion of that lot to the new owner. The new owner will then have to obtain a new permit and implement his/her own SWPPP for that lot before the NOT will be accepted.**

SWPPP Inspection Required

Before any construction work can being, the SWPPP must be implemented. Once the BMP's have been installed, a site inspection will be required. When submitting an NOT, a final site inspection will be required. No SWPPP will be released until the area of disturbance has been stabilized.

Storm Water Pollution Prevention Plan Construction Activity Template

I understand that this SWPPP template is required and will remain in effect until the entire project is stabilized, including re-vegetation and the NOT has been filled and accepted. All control measures will be inspected at least weekly and immediately after or during every storm even of .5 inches or more. Tracking onto roads will be cleaned up immediately. Written records of all inspections, changes to this plan, and failures of control devices will be kept. The contractor is required to train all subcontractors, vendors, delivery personnel, and others who will be working on the site. The contractor is responsible for compliance of the SWPPP for the entire site and duration of the project. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for known violations. I understand that a pre-SWPPP inspection will be needed before any work can commence and a NOT will be submitted when the project is finished.

Print Name _____

Signature _____

Date _____

OFFICIAL USE ONLY

Approved _____ Date: _____

Special Conditions: _____

_____

_____

OFFICIAL USE ONLY
PRECONSTRUCTION INSPECTION

Approved: _____ Date: _____

Special Conditions: _____

_____

_____

Site Plan Storm Water Pollution Prevention Plan Checklist

	YES	*NO*	*N/A*
Does the SWPPP show the location of the SWPPP Board BMP?	☐	☐	☐
Does the SWPPP show the location of the construction entrance/exit?	☐	☐	☐
Does the SWPPP show a designated material storage area?	☐	☐	☐
Does the SWPPP show the equipment wash out area?	☐	☐	☐
Does the SWPPP include the location of the concrete wash out area?	☐	☐	☐
Does the SWPPP include the location of the portable toilet?	☐	☐	☐
Does the SWPPP include the installation of storm drain inlet protection BMPs?	☐	☐	☐
Does the SWPPP include the location of the perimeter storm runoff control BMPs?	☐	☐	☐
Does the SWPPP include the location of trash containers or trash receptacles?	☐	☐	☐
Does the SWPPP show the spacing and number of trash containers provided?	☐	☐	☐
Does the SWPPP include existing wetlands?	☐	☐	☐
Does the SWPPP specify the percentage of area to be disturbed or cleared?	☐	☐	☐
Does the SWPPP show exiting waters of the state located within 200 feet?	☐	☐	☐
Does the SWPPPP include a proposed phasing plan if the project will be divided into several phases?	☐	☐	☐
Does the SWPPP include the frequency of the street/ parking lot sweeping?	☐	☐	☐
Does the SWPPP include the frequency of the litter collection?	☐	☐	☐
Does the SWPPP include the number of inlet protection BMPs to be installed during construction?	☐	☐	☐
Does the SWPPP include the frequency of the maintenance inspections of the storm drain inlet protection BMPs?	☐	☐	☐