Beazer Homes

Site List and Project List

Appendix A

Beazer Homes Site List

Division:	Site Location:							
Site Name: *(Provide Site Name used on Applicable Stormwater Permit Application, i.e., NOI/RFA, etc)*	Street Address or Latitude (xx.xxxx format)	City Longitude (xx.xxxx format)	County	State	Date PCIR Signed *(mm/dd/yyyy)* *(Insert N/A if Site active prior to Decree)*	Acres *(estimated)* to be disturbed *(From Applicable Stormwater Permit Application, i.e., NOI/RFA, etc.)*	Name of Permit Holder: *(Provide Permit Holder Name used on Permit Application, i.e., NOI/RFA, etc. In some cases this will not be Beazer Homes)*	Date NOT Signed *(mm/dd/yyyy)* *(For all NOIs when applicable)*

Number of Sites not listed above that are owned or operated by an entity in which Beazer has an interest other than a wholly-owned interest:___________

Project List

Region: Division:

Project Name	Project Location	
	County	State

Beazer Homes

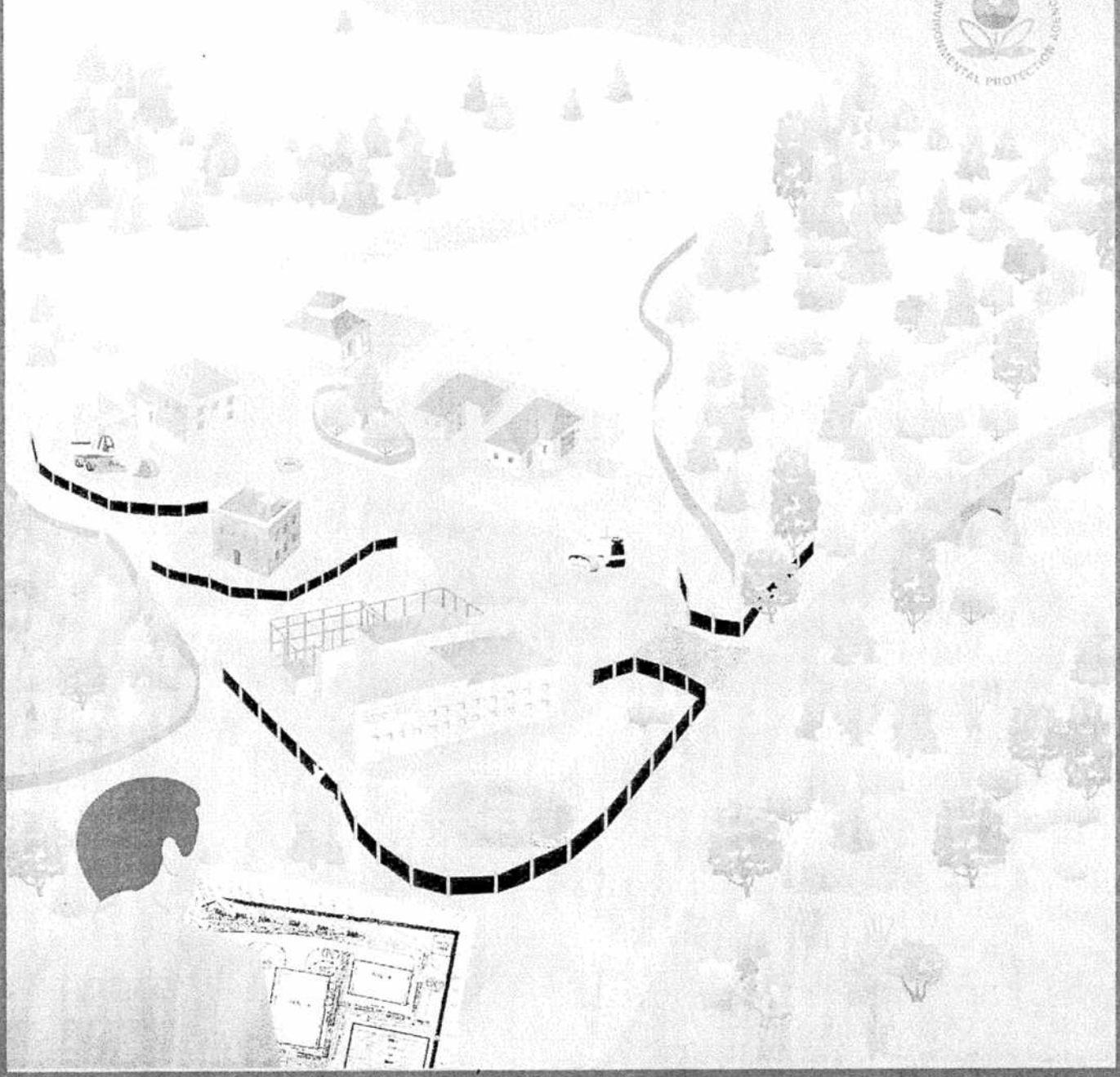
Guidance Document
"Developing your Stormwater Pollution Prevention Plan: A Guide for Construction Sites."

Appendix B

Developing Your Stormwater Pollution Prevention Plan

A Guide for Construction Sites

EPA-833 R-06-004
May 2007



Developing Your Stormwater Pollution Prevention Plan

A Guide for Construction Sites

Who?

Construction site operators (generally, the person who has operational control over construction plans and/or the person who has day-to-day supervision and control of activities occurring at the construction site)

Where?

Construction sites required to comply with stormwater discharge requirements

What?

A guide to help you develop a good Stormwater Pollution Prevention Plan (SWPPP)

Why?

Stormwater runoff from construction sites can cause significant harm to our rivers, lakes, and coastal waters

A SWPPP is required (by your construction general permit) and will help you prevent stormwater pollution

A SWPPP is more than just a sediment and erosion control plan.
It describes all the construction site operator's activities to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act

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Purpose of this Guidance Document

This document provides guidance to construction site operators that need to prepare a SWPPP in order to receive NPDES permit coverage for their stormwater discharges. The Clean Water Act provisions, EPA regulations and EPA's Construction General Permit described in this document contain legally binding requirements. This document does not substitute for those provisions, regulations or permit, nor is it a regulation or permit itself. It also does not substitute for requirements under State law or construction general permits issued by States. It does not impose legally-binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and State decisionmakers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular construction site will be made based on the applicable statutes, regulations and/or permit terms. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA—or the applicable NPDES permitting authority—will consider whether or not the recommendations or interpretations in the guidance are appropriate in that situation based on the law and regulations.

This guidance document occasionally uses language describing mandatory requirements for construction site operators and those covered by a general permit for stormwater discharges from such sites. This language is generally intended to reflect requirements applicable where EPA is the NPDES permitting authority. Although requirements in jurisdictions where EPA is not the permitting authority may resemble these requirements, the reader should not assume that this guidance accurately describes those requirements. Rather, the reader should consult the applicable regulations and any applicable NPDES permit.

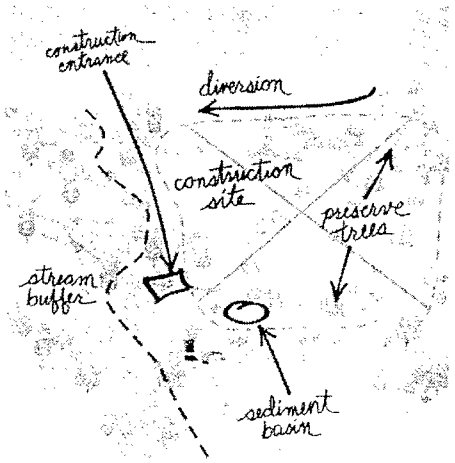
Contents

What is a Stormwater Pollution Prevention Plan (SWPPP)?

A SWPPP may be called many things. Your state may use terms like:

- **Construction Best Practices Plan**
- **Sediment and Stormwater Plan**
- **Erosion, Sediment, and Pollution Prevention Plan**
- **Construction Site Best Management Practices Plan**
- **Erosion Control Plan and Best Management Practices**
- **Best Management Practices Plan**
- **Erosion and Sediment Control Plan**

Regardless of the title used in your state, these documents—and the stormwater permits that require them—tend to have many common elements. This guide is intended to help you develop a better SWPPP for your construction site.



Example sketch identifying various points to address in the SWPPP.

How to Use This Guide

- This guide was developed as a helpful reference guide for construction site operators across the country. We have tried to accommodate the wide range of knowledge and experience about stormwater pollution prevention that currently exists among operators—from novice to expert.
  - If you are relatively new to managing stormwater at a construction site, you will probably want to read this entire guide.
  - If you are very experienced and familiar with the requirements in your state, this guide may help you brush up on certain requirements or provide you with ideas to improve your SWPPP. You might want to review the table of contents and skip around. Be sure to take a look at the SWPPP template (Appendix A) to see if you can make improvements in the way you develop and maintain your SWPPP.

- This guide is written in a general format and can be used at most construction sites in any state, territory, or in Indian country. The document assumes that you will obtain discharge authorization under an appropriate National Pollutant Discharge Elimination System (NPDES) construction general permit and use both the permit and this guidance to assist in developing your SWPPP. In this guide, we make some references to the U.S. Environmental Protection Agency's Construction General Permit for illustrative purposes. **You should always consult your applicable NPDES permit for the exact requirements that apply to you.**

- Remember that you are developing your SWPPP for both your use and for review by the regulatory agencies responsible for overseeing your stormwater controls. As such, one of your goals in developing your SWPPP should be to present the information in a way that clearly demonstrates that it meets all the requirements of your NPDES permit.

- You can obtain an electronic copy of this guide (PDF format), the SWPPP template, and inspection form (in Microsoft Word) at **www.epa.gov/npdes/swpppguide**

Chapter 1: **Introduction**

▶ This chapter provides an orientation to this guide and its contents and describes why stormwater controls at construction sites are necessary.

A. Why Should You Use this Guide?

If you are responsible for erosion and sediment control and stormwater management at a permitted construction site, then this guide may be useful to you. This guide is designed to walk you through the steps for developing and implementing an effective stormwater pollution prevention plan (SWPPP). The basic outline of the guide is presented below:

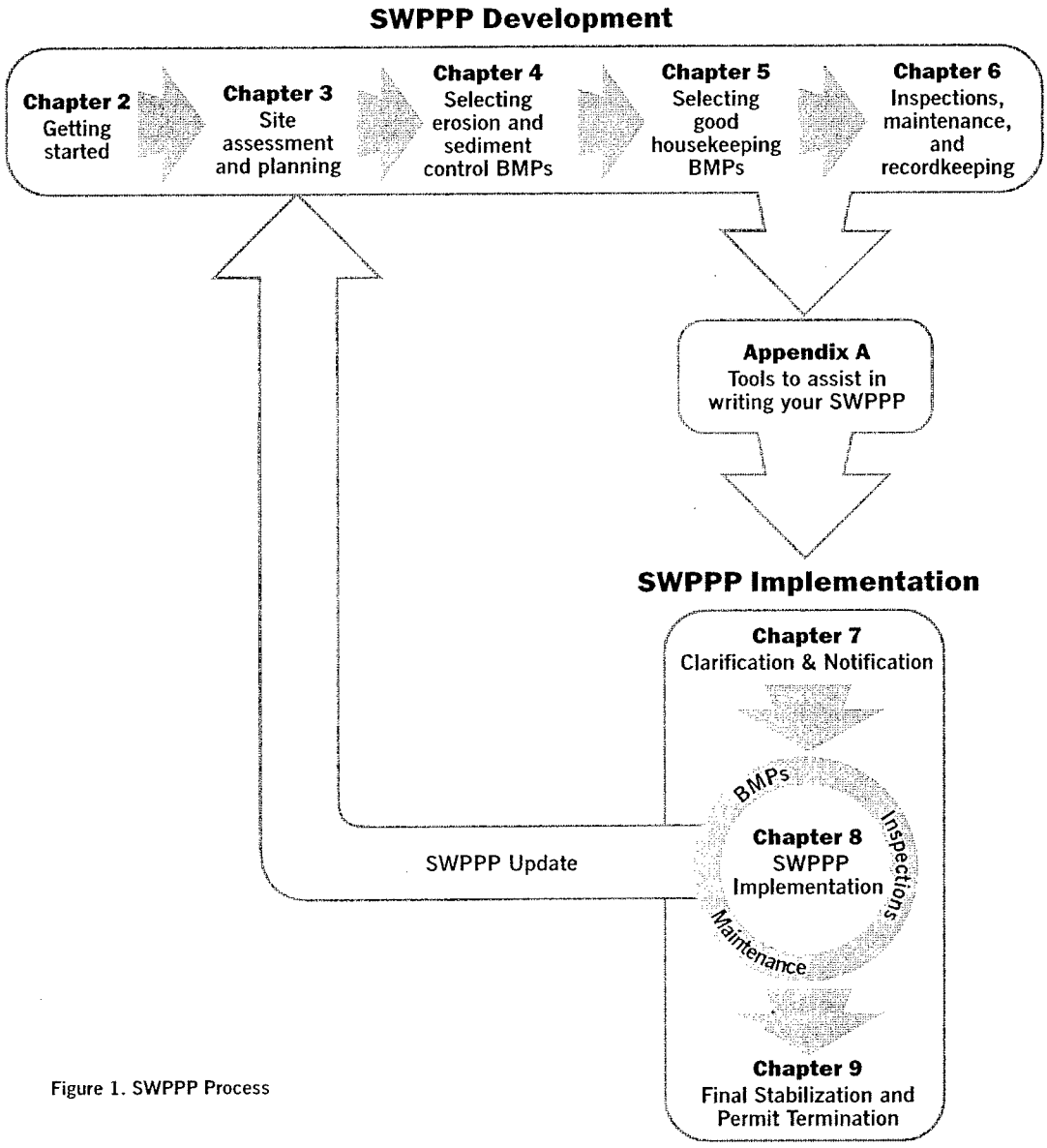


Figure 1. SWPPP Process

Take a Closer Look...

What is a SWPPP?

A SWPPP is a site-specific, written document that:

- Identifies potential sources of stormwater pollution at the construction site
- Describes practices to reduce pollutants in stormwater discharges from the construction site. Reduction of pollutants is often achieved by controlling the volume of stormwater runoff (e.g., taking steps to allow stormwater to infiltrate into the soil).
- Identifies procedures the operator will implement to comply with the terms and conditions of a construction general permit

What does this mean to me?

Failure to implement your SWPPP could result in significant fines from EPA or a state environmental agency. Therefore, it is important that you develop your SWPPP to address the specific conditions at your site, fully implement it, and keep it up-to-date to reflect changes at your site.

B. What Is Stormwater Runoff and What Are Its Impacts?

Stormwater runoff is rain or snowmelt that flows over land and does not percolate into the soil. Stormwater runoff occurs naturally, in small amounts, from almost any type of land surface, especially during larger storm events. Impervious surfaces, such as buildings, homes, roads, sidewalks, and parking lots, can significantly alter the natural hydrology of the land by increasing the volume, velocity, and temperature of runoff and by decreasing its infiltration capacity. Increasing the volume and velocity of stormwater runoff can cause severe stream bank erosion, flooding, and degrade the biological habitat of these streams. Reducing infiltration can lower ground water levels and affect drinking water supplies.

SWPPP Tip!

A SWPPP can have different names

A SWPPP may also be called a *"construction best practices plan," "sediment and stormwater plan," "erosion, sedimentation, and pollution prevention plan,"* or similar term. The SWPPP (or similarly named plan) is generally required to comply with EPA's or the state's stormwater construction general permit.

In addition, as stormwater runoff moves across surfaces, it picks up trash, debris, and pollutants such as sediment, oil and grease, pesticides and other toxics. Changes in ambient water temperature, sediment, and pollutants from stormwater runoff can be detrimental to aquatic life, wildlife, habitat, and human health. Soil exposed by construction activities is especially vulnerable to erosion. Runoff from an unstabilized construction site can result in the loss of approximately 35–45 tons of sediment per acre each year (ASCE and WFF, 1992). Even during a short period of time, construction sites can contribute more sediment to streams than would be deposited naturally over several decades. Excess sediment can cloud the water reducing the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways.

The primary stormwater pollutant at a construction site is sediment. To control erosion at a construction site, it is important to understand the different types of erosion that can occur. Erosion begins when raindrops break down the soil structure and dislodge soil particles. Runoff carrying the soil particles becomes sheet erosion which eventually forms smaller rills and larger gullies. The best way to stop erosion is to keep the soil in place through vegetation, erosion control blankets, or other methods that prevent the soil from becoming dislodged during rain events.

The erosion process is typically influenced by climate, topography, soils, and vegetative cover. Understanding how these factors influence erosion will help you select and design appropriate controls to minimize erosion from your construction site.

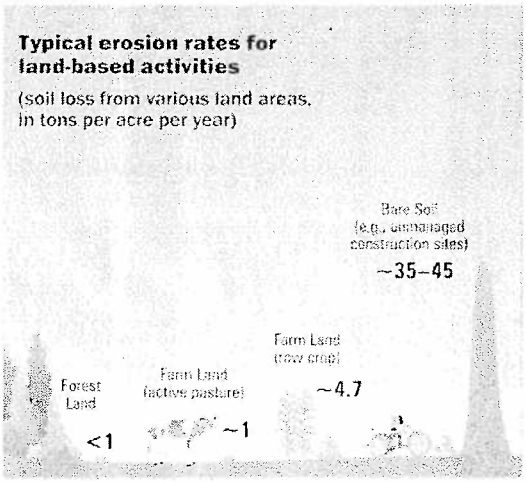


Figure 2. Typical erosion rates from land-based activities. (Dunne, T. and L. Leopold, 1978; NRCS, 2000; NRCS, 2006; ASCE and WEF, 1992)

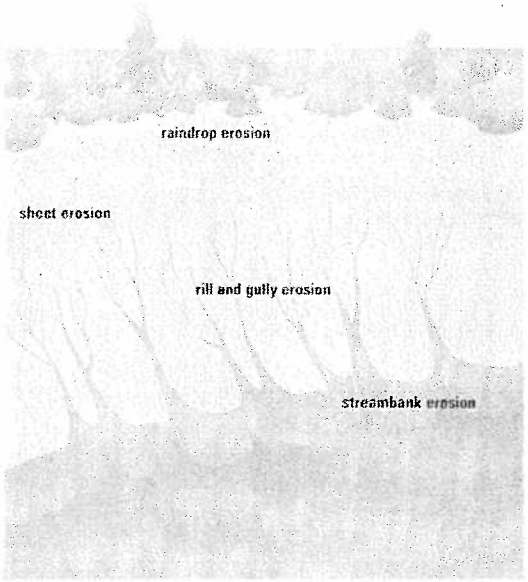


Figure 3. Types of erosion.

Raindrop erosion
Dislodging of soil particles by raindrops

Sheet erosion
The uniform removal of soil without the development of visible water channels

Rill erosion
Soil removal through the formation of concentrated runoff that creates many small channels

Gully erosion
The result of highly concentrated runoff that cuts down into the soil along the line of flow

Streambank erosion
Flowing water that erodes unstable streambanks

Climate. The frequency, intensity, and duration of rainfall are the principal factors influencing erosion from a construction site. Know the weather patterns in your area and, if possible, plan your soil disturbance activities for periods of historically lower rainfall.

Topography. The longer and steeper a slope, the greater the potential there is for erosion from that slope. Use practices such as diversions or fiber rolls to break up long slopes. Consider minimizing soil disturbance activities on steeper slopes.

Soils. Soil type can also impact erosion. Soil texture, structure, organic matter content, compaction, and permeability can all influence erosion rates.

Vegetative cover. Vegetative cover provides a number of critical benefits in preventing erosion—it absorbs the energy of raindrops, slows velocity of runoff, increases infiltration, and helps bind the soil. Soil erosion can be greatly reduced by maximizing vegetative cover at a construction site.

C. How Can Construction Site Operators Prevent Stormwater Pollution?

An effective SWPPP is the key! If sediment and erosion controls and good housekeeping practices are not followed, construction activity can result in the discharge of significant amounts of sediment and other pollutants. The term *Best Management Practices* or BMPs is often used to describe the controls and activities used to prevent stormwater pollution.

SWPPP Tip!

Erosion versus Sedimentation

Erosion is the process by which the land surface is worn away by the action of water or wind. Sedimentation is the movement and settling out of suspension of soil particles. It is usually easier and less expensive to prevent erosion than it is to control sediment from leaving a construction site.

BMPs can be divided into two categories—structural and non-structural BMPs. Structural BMPs include silt fences, sedimentation ponds, erosion control blankets, and temporary or permanent seeding, while non-structural BMPs include picking up trash and debris, sweeping up nearby sidewalks and streets, maintaining equipment, and training site staff on erosion and sediment control practices. In this document, the term "BMPs" is used broadly and includes both structural and non-structural controls and practices.

A SWPPP is more than just a sediment and erosion control plan. Most SWPPPs are written documents that describe the pollution prevention practices and activities that will be implemented on the site. It includes descriptions of the site and of each major phase of the planned activity, the roles and responsibilities of contractors and subcontractors, and the inspection schedules and logs. It is also a place to document changes and modifications to the construction plans and associated stormwater pollution prevention activities.

Chapter 2: **Getting Started**

This chapter describes some of the basic things you'll want to determine (Do you need permit coverage? What permit applies to you?), as well as some of the materials and information you may need to develop your SWPPP. Collecting this information before you start will help you develop your SWPPP more efficiently. Keep in mind that you may also need to gather this information and develop your SWPPP before you complete your Notice of Intent (NOI) and file for permit coverage (note that filing an NOI is not discussed until Chapter 7).

A. What Are the Federal Requirements for Stormwater Runoff from Construction Sites?

The Clean Water Act and associated federal regulations (Title 40 of the *Code of Federal Regulations* [CFR] 123.25(a)(9), 122.26(a), 122.26(b)(14)(x) and 122.26(b)(15)) require nearly all construction site operators engaged in clearing, grading, and excavating activities that **disturb one acre or more, including smaller sites in a larger common plan of development or sale**, to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) permit for their stormwater discharges. Under the NPDES program, the U.S. Environmental Protection Agency (EPA) can authorize states to implement the federal requirements and issue stormwater permits. Today, most states are authorized to implement the NPDES program and issue their own permits for stormwater discharges associated with construction activities.

SWPPP Tip!

Don't forget about "common plans of development or sale"

A *common plan of development or sale* includes larger-scale plans for land development to be carried out by one or more entities. Examples include housing developments and subdivisions, industrial parks, and commercial developments.

EPA has described this term in the fact sheet accompanying its Construction General Permit as including: any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.), or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot. Each permitting authority may review documentation to determine if common plan requirements apply.

Each state (or EPA, in the case of states that are not authorized) issues one or more NPDES construction general permits. These permits, generally, can be thought of as umbrella permits that cover all stormwater discharges associated with construction activity in a given state for a designated time period, usually 5 years. Operators of individual constructions sites then apply for coverage under this permit. *Before applying for permit coverage, you should read and understand all the provisions of the appropriate construction general permit and develop a SWPPP.* **Because authorized states develop their own NPDES requirements, you should carefully read your state's construction general permit and follow the specific instructions it contains.**

Take a Closer Look...

EPA Permits vs. State-Issued Permits

At the time of publication, EPA was the NPDES permitting authority in Massachusetts, New Hampshire, New Mexico, Idaho, Alaska, the District of Columbia, Puerto Rico, the U.S. territories (except the Virgin Islands), most Indian country lands, and for federal facilities in four states. For an up-to-date list of NPDES permitting authorities, visit **www.epa.gov/npdes/stormwater/construction** or **www.cicacenter.org/swrl.html**

What does this mean to me?

Because EPA and state-issued permits can be different, you should make sure you read and apply for the correct permit. Use the links on either of the web sites listed to the left to determine which agency issues NPDES permits where your construction activity will occur.

Most construction general permits contain similar elements:

- Applicability—describes the geographic area covered and who is eligible to apply
- Authorization—describes the types of stormwater (and non-stormwater) discharges that are covered
- SWPPP requirements—outlines the elements that should to be addressed to prevent the contamination of stormwater runoff leaving the construction site
- Application—includes instructions for obtaining permit coverage, usually by filing an application or Notice of Intent (NOI) form
- Implementation—BMP installation, inspection, and maintenance requirements
- Other requirements—may include additional requirements such as spill prevention
- Standard conditions—list of conditions that are applicable to most NPDES permits
- Termination—lists conditions for terminating permit coverage after construction is complete

What Construction Activities Require NPDES Permit Coverage?

In this document, *"construction"* refers to actions that result in a disturbance of the land, including clearing, grading, excavating, and other similar activities. It also includes *"construction-related activities,"* areas that support the construction project such as stockpiles, borrow areas, concrete truck washouts, fueling areas, material storage areas and equipment storage areas.

Construction activities that do not disturb land, such as interior remodeling, generally do not require NPDES permit coverage.

Are There Situations Where a Permit Is Not Needed?

Generally, permit coverage is not required for activities that are considered routine maintenance, such as landscaping, road maintenance, and maintaining stormwater BMPs. Some states and EPA offer the option of a waiver for small sites (disturbing less than 5 acres) in areas and times of the year with low predicted rainfall. To be eligible for the waiver, you would have to meet the requirements specified in the regulations.

Local Requirements

Operators of construction sites should keep in mind that local governments (cities, towns, counties) often have their own requirements for construction sites (e.g., local permits for grading, sediment and erosion, utilities). **Compliance with local requirements does not mean compliance with federal NPDES requirements or vice versa, unless the authorized state agency or EPA has specifically designated the local program a *qualifying local program*.**

Qualifying Local Programs

In some states, the NPDES permitting agency has identified certain local construction stormwater control programs that have requirements that are equivalent or more protective than the state's requirements. If one of these local stormwater programs has been designated by the permitting agency as a *qualifying local program*, the construction site operator may simply read and follow the local requirements. The permitting agency (state or EPA) might choose to waive the requirement to file a Notice of Intent (NOI) or similar application form for small construction sites operating within the jurisdiction of a qualifying local program. If waived, these sites would be covered under the appropriate construction general permit automatically. Check your construction general permit carefully.

The NPDES permitting authority must identify any qualifying local programs in the construction general permit. Violations of the local requirements are also considered violations of the NPDES requirements and may be enforced accordingly.

SWPPP Tip!

Read Your General Permit!

You should thoroughly read and understand the requirements in your general permit. This includes requirements on eligibility (whether your site qualifies for the general permit), application (how to notify EPA or the state that you'd like to be covered by the general permit), SWPPPs, and termination (stabilizing your site and notifying EPA or the state that your project is complete). By applying for coverage under the general permit, you are telling EPA or your state that you will comply with the permit's requirements, so read your permit carefully!

B. Who Is Required to Get NPDES Permit Coverage?

Construction site *operators* are responsible for obtaining NPDES permit coverage for their stormwater discharges. Each state has its own definition of the term *operator.* Operators may include owners (e.g., developers), general contractors, independent subcontractors, government officials, companies, or corporations. This section reflects EPA's understanding of most NPDES permit requirements for stormwater discharges throughout the country. You should, of course, consult your construction general permit for the requirements that apply to you. In some cases, states have defined the operator as a single entity, usually the land owner or easement holder. In other states, several entities may meet the definition of operator. For instance, the owner may control the project's plans and specifications, and the general contractor may control the site's day-to-day operations. In such cases, both may be defined as operators. If a site has multiple operators, they may cooperate on the development and implementation of a single SWPPP. Operators generally obtain coverage under an NPDES permit, often by filing a form called a Notice of Intent (NOI).

Figure 4. Use signage to help educate construction staff.

EPA's Construction General Permit (which applies only where EPA is the permitting authority—see Chapter 2 Section A) defines operator as any party that:

- Has control over the construction plans and specifications

  and/or

- Has day-to-day operational control of the site, including activities necessary to implement the SWPPP

Regardless of whether or not the operator is a corporation or governmental entity, someone must direct the SWPPP's preparation and implementation and apply for NPDES permit coverage for the stormwater discharges. In most cases, this will be a high-level official, such as a corporate officer, manager or elected official, or a principal executive officer. For specific instructions, refer to the appropriate NPDES stormwater permit.

Multiple Operators

In many instances, there may be more than one party at a site performing tasks related to *operational control* and more than one operator may need to submit an NOI. Depending on the site and the relationship between the parties (e.g., owner, developer, general contractor), there can either be a single party acting as site operator and consequently responsible for obtaining permit coverage, or there can be two or more operators all needing permit coverage. Exactly who is considered an operator is largely controlled by how the *owner* of the project chooses to structure the contracts with the *contractors* hired to design and/or build the project. The following are three general operator scenarios (variations on any of these three are possible, especially as the number of owners and contractors increases):

- *Owner as sole permittee.* The property owner designs the structures for the site, develops and implements the SWPPP, and serves as general contractor (or has an on-site representative with full authority to direct day-to-day operations). The owner may be the only party that needs permit coverage under these circumstances. Everyone else on the site may be considered subcontractors and might not need permit coverage.

- *Contractor as sole permittee.* The property owner hires one company (i.e., a contractor) to design the project and oversee all aspects of the construction project, including preparation and implementation of the SWPPP and compliance with the permit (e.g., a *turnkey* project). Here, the contractor would likely be the only party needing a permit. It is under this scenario that an individual having a personal residence built for his own use (e.g., not those to be sold for profit or used as rental property) would not be considered an operator. However, individual property owners would meet the definition of *operator* and may require permit coverage if they perform general contracting duties for construction of their personal residences.
- *Owner and contractor as co-permittees.* The owner retains control over any changes to site plans, SWPPPs, or stormwater conveyance or control designs; but the contractor is responsible for overseeing actual earth disturbing activities and daily implementation of SWPPP and other permit conditions. In this case, which is the most common scenario, both parties may need to apply for permit coverage.

However, you are probably not an operator and subsequently would not need permit coverage if one of the following is true:

- You are a subcontractor hired by, and under the supervision of, the owner or a general contractor (i.e., if the contractor directs your activities on-site, you probably are not an operator)
- The operator of the site has indicated in the SWPPP that someone other than you (or your subcontractor) is reponsible for your activities as they relate to stormwater quality (i.e., another operator has assumed responsibility for the impacts of your construction activities). This is typically the case for many, if not most, utility service line installations.

In addition, *owner* typically refers to the party that owns the structure being built. Ownership of the land where construction is occurring does not necessarily imply the property owner is an operator (e.g., a landowner whose property is being disturbed by construction of a gas pipeline). Likewise, if the erection of a structure has been contracted for, but possession of the title or lease to the land or structure does not to occur until after construction, the would-be owner may not be considered an operator (e.g., having a house built by a residential homebuilder).

Transferring Ownership

In many residential developments, an overall developer applies for the stormwater permit coverage, conducts grading activities, and installs the basic infrastructure (e.g., utilities, roads). Individual lots are then sold to builders who then construct the houses. Unless the developer is still responsible for stormwater on these individual lots (which is typically not the case), it is likely that the builder will need to apply for NPDES permit coverage for stormwater discharges during home construction.

Subcontractors

It is typically a good idea to include specific contract language requiring subcontractors to implement appropriate stormwater controls. Subcontractors should be trained on appropriate BMPs and requirements in the SWPPP and should not disturb or remove BMPs. Some contractors will include specific penalties in subcontractor agreements to ensure subcontractors do not damage or remove BMPs.

Take a Closer Look...

Erosion Control vs. Sediment Control

When developing a SWPPP, it is important to understand the difference between erosion control and sediment control. Erosion control measures (e.g., mulch, blankets, mats, vegetative cover) protect the soil surface and prevent soil particles from being dislodged and carried away by wind or water. Sediment control measures remove soil particles after they have been dislodged (typically through settling or filtration). It is usually easier and less expensive to prevent erosion than it is to control sedimentation.

What does this mean to me?

You should try to use erosion control BMPs as the primary means of preventing stormwater contamination, and sediment control techniques to capture any soil that does get eroded. Because no one technique is 100 percent effective, a good SWPPP will use both kinds of BMPs in combination for the best results.

C. What Elements Are Required in a SWPPP?

The SWPPP lays out the steps and techniques you will use to reduce pollutants in stormwater runoff leaving your construction site. Therefore, proper development and implementation of your SWPPP is crucial. First and foremost, your SWPPP must be developed and implemented consistent with the requirements of the applicable NPDES stormwater construction permit. The following discussion describes requirements that are contained in most of these permits.

Your SWPPP is used to identify all potential pollution sources that could come into contact with stormwater leaving your site. It describes the BMPs you will use to reduce pollutants in your construction site's stormwater discharges, and it includes written records of your site inspections and the follow-up maintenance that is performed.

Your SWPPP should contain the following elements:

- Cover/title page
- Project and SWPPP contact information
- Site and activity description, including a site map
- Identification of potential pollutant sources
- Description of controls to reduce pollutants
- Maintenance/inspection procedures
- Records of inspections and follow-up maintenance of BMPs
- SWPPP amendments
- SWPPP certification

Chapters 3–6 of this guide describe how to develop a SWPPP—from site evaluation and data collection to selecting appropriate BMPs and assigning maintenance and inspection responsibilities.

D. SWPPP Roles and Responsibilities

The operator has the lead for developing and implementing the SWPPP and commiting resources to implement the BMPs. Stormwater pollution control is typically the job of more than a single person; the SWPPP development process provides a good opportunity to define roles and responsibilities of everyone involved. Roles and responsibilities are to be documented clearly in the SWPPP and subcontractor agreements as necessary. Your SWPPP should describe:

- Who is on the stormwater pollution prevention team?
- Who will install structural stormwater controls?
- Who will supervise and implement good housekeeping programs, such as site cleanup and disposal of trash and debris, hazardous material management and disposal, vehicle and equipment maintenance, and so on?
- Who will conduct routine inspections of the site to ensure all BMPs are being implemented and maintained?
- Who will maintain the BMPs?
- Who is responsible for documenting changes to the SWPPP?
- Who is responsible for communicating changes in the SWPPP to people working on the site?

When you apply for your stormwater permit, the application may ask for a SWPPP contact. This could be the construction site operator, but in many cases it's a staff person (e.g., project superintendent, field manager, construction manager, stormwater compliance officer) at the construction site who is responsible for conducting inspections, ensuring BMPs are installed and maintained, and updating the SWPPP when necessary.

Erosion Control Certification

Several programs promote the training and certification of individuals in erosion and sediment control. Some states have developed certification programs and require construction sites to have a certified individual on-site at all times. The Soil and Water Conservation Society and the International Erosion Control Association sponsor a national certification program, the Certified Professional in Erosion and Sediment Control (**www.cpesc.org**)

E. Common SWPPP Objectives

The SWPPP outlines the steps you will take to comply with the terms and conditions of your construction general permit. Keeping the following objectives in mind as you develop your SWPPP will help guide you in addressing your permit requirements and in protecting water quality.

- *Stabilize the site as soon as possible.* Get your site to final grade and either permanently or temporarily stabilize all bare soil areas as soon as possible. Take into consideration germination times for the grasses or other vegetation selected, and provide additional stabilization (mulches, matrices, blankets, soil binders) on erosion-prone areas such as slopes and drainage ways. Also consider seasonal limitations to plant establishment and growth, such as drought or cold temperatures, and make an effort to ensure that areas that are not showing adequate vegetation establishment are reseeded or mulched immediately. Areas needed for future roads, construction, or other purposes should be temporarily stabilized (see your permit for requirements related to areas of the site not currently under active construction). Establishing a vegetated cover on as much of the site as possible will help to minimize erosion and sediment problems. Perimeter controls should remain in place until final stabilization has been achieved.
- *Protect slopes and channels.* Convey concentrated stormwater runoff around the top of slopes and stabilize slopes as soon as possible. This can be accomplished using pipe slope drains or earthen berms that will convey runoff around the exposed slope. Avoid disturbing natural channels and the vegetation along natural channels, if possible.
- *Reduce impervious surfaces and promote infiltration.* Reducing impervious surfaces will ultimately reduce the amount of runoff leaving your site. Also, divert runoff from rooftops and other impervious surfaces to vegetated areas when possible to promote infiltration.
- *Control the perimeter of your site.* Divert stormwater coming on to your site by conveying it safely around, through, or under your site. Avoid allowing run-on to contact disturbed areas of the construction site. For the runoff from the disturbed areas of the site, install BMPs such as silt fences to capture sediment before it leaves your site. Remember—"Divert the clean water, trap the dirty water."
- *Protect receiving waters adjacent to your site.* Erosion and sediment controls are used around the entire site, but operators should consider additional controls on areas that are adjacent to receiving waters or other environmentally sensitive areas. **Remember, the primary purpose of erosion and sediment controls is to protect surface waters.**
- *Follow pollution prevention measures.* Provide proper containers for waste and garbage at your site. Store hazardous materials and chemicals so that they are not exposed to stormwater.
- *Minimize the area and duration of exposed soils.* Clearing only land that will be under construction in the near future, a practice known as construction phasing, can reduce off-site sediment loads by 36 percent for a typical subdivision (Claytor 2000). Additionally, minimizing the duration of soil exposure by stabilizing soils quickly can reduce erosion dramatically.

Take a Closer Look...

Incentives to preserve open space

It should be the goal of every construction project to, where possible, preserve open space and minimize impervious surfaces through practices such as clustering houses. Open space preservation can provide significant water quality and economic benefits to property owners.

What does this mean to me?

From a marketing perspective, studies have shown that lots abutting forested or other open space are initially valued higher than lots with no adjacent open space, and over time their value appreciates more than lots in conventional subdivisions (Arendt 1996). For example, lots in an open space subdivision in Amherst, Massachusetts, experienced a 13 percent greater appreciation in value over a comparable conventional development after 20 years even though the lots in the conventional development were twice as large (Arendt 1996).

Chapter 3: **SWPPP Development—Site Assessment and Planning**

The first step in developing a SWPPP is assessing the site and identifying measures to protect natural features.

This chapter describes a number of steps that will help provide a good foundation for your SWPPP, including:

- Assessing current conditions at the site
- Establishing pollution prevention and water quality protection goals for your project
- Developing a framework to help you meet those goals

A. Assess Your Site and Proposed Project

The first step in developing your SWPPP is to evaluate your proposed construction site. Your SWPPP should describe the undeveloped site and identify features of the land that can be incorporated into the final plan and natural resources that should be protected. Understanding the hydrologic and other natural features of your site will help you develop a better SWPPP and, ultimately, to more effectively prevent stormwater pollution.

SWPPP Tip!

A SWPPP is a detailed plan that:

- Identifies potential sources of stormwater pollution
- Describes the practices that will be used to prevent stormwater pollution. These should include: erosion and sediment control practices, good housekeeping practices, conservation techniques, and infiltration practices (where appropriate), and
- Identifies procedures the operator will implement to comply with all requirements in the construction general permit

Visit the Site

The people responsible for site design and drafting the SWPPP should conduct a thorough walk-through of the entire construction site to assess site-specific conditions such as soil types, drainage patterns, existing vegetation, and topography. Avoid copying SWPPPs from other projects to save time or money. Each construction project and SWPPP is unique, and visiting the site is the only way to create a SWPPP that addresses the unique conditions at that site.

Assess Existing Construction Site Conditions

Assess the existing conditions at the construction site, including topography, drainage, and soil type. This assessment, sometimes called *fingerprinting* (see text box on page 11) is the foundation for building your SWPPP and for developing your final site plan. In this assessment, use or create a topographic drawing that:

- Indicates how stormwater currently drains from the site, and identify the location of discharge points or areas
- Identifies slopes and slope lengths. The topographic features of the site are a major factor affecting erosion from the site
- Identifies soil type(s) and any highly erodible soils and the soil's infiltration capacity
- Identifies any past soil contamination at the site
- Identifies natural features, including trees, streams, wetlands, slopes and other features to be protected

Take a Closer Look...

Fingerprinting Your Site

When you evaluate your construction site, you should clearly identify vegetation, trees, and sensitive areas, such as stream buffers, wetlands, highly erodible soils, and steep slopes at your site. You should protect these areas from disturbance. Inventorying a site's natural features is a technique called fingerprinting. Fingerprinting identifies natural features that you can protect from clearing and heavy equipment by signage or physical barriers.

What does this mean to me?

Fingerprinting your site will help ensure that you don't damage natural features such as waterways or wetlands. Conducting construction activity in a waterway or wetland without the proper permits can result in significant penalties.

In most cases, the site designer can compile all this information on a digitized drawing that can then be adapted to show the planned construction activity, the phases of construction, and the final site plan.

Topographic maps are readily available on the Internet (e.g., **www.terraserver.com** or **www.mapquest.com**) or by contacting the U.S. Geological Survey store (**http://store.usgs.gov**). If you need help determining your soil type, contact your local Natural Resource Conservation Service (NRCS) office or extension service office. To find the NRCS office nearest to your site, visit the U.S. Department of Agriculture's Service Center Locator website (**http://offices.sc.egov.usda.gov/locator/app**). Soil information is also available online from NRCS (**http://soils.usda.gov**).

Identify Receiving Waters, Storm Drains, and Other Stormwater Conveyance Systems

Your SWPPP should clearly identify the receiving waters and stormwater systems through which stormwater from your site could flow. Many states require planning for a specific storm event or storm events. These storm events are referred to by their recurrence interval and duration such as 1-year, 6-hour storm or a 100-year, 24-hour storm. These events then translate into a specific rainfall amount depending on average conditions in your area.

If your site's stormwater flows into a municipal storm drain system, you should determine the ultimate destination of that system's discharge. This may be obvious and easy to document. However, in some systems, you may have to consult with the local agency responsible for the storm drain system to determine the waterbody to which you are discharging.

If your site's stormwater runs off to areas not connected to the storm drain system, you should consider your land's topography and then identify the waterbodies that it could reach. Many sites will discharge some stormwater to a storm drain system and some to other areas not connected to the system. If your site's stormwater could potentially reach two or more waterbodies, note that in your SWPPP. Remember, stormwater can travel long distances over roads, parking lots, down slopes, across fields, and through storm sewers and drainage ditches.

Describe Your Construction Project

Your SWPPP should contain a brief description of the construction activity, including:

- Project type or function (for example, low-density residential, shopping mall, highway)
- Project location, including latitude and longitude
- Estimated project start and end dates
- Sequence and timing of activities that will disturb soils at the site
- Size of the project
- Estimated total area expected to be disturbed by excavation, grading, or other construction activities, including dedicated off-site borrow and fill areas
- Percentage of impervious area before and after construction

Construction Site Pollutants									
	Primary Pollutant	Other Pollutants							
Areas of Consideration	Sediment	Nutrients	Heavy metals	pH (acids & bases)	Pesticides & herbicides	Oil & grease	Bacteria & viruses	Trash, debris, solids	Other toxic chemicals
Clearing, grading, excavating, and unstabilized areas	✓							✓	
Paving operations	✓							✓	
Concrete washout and waste			✓	✓				✓	
Structure construction/ painting/cleaning		✓		✓				✓	✓
Demolition and debris disposal	✓							✓	
Dewatering operations	✓	✓							
Drilling and blasting operations	✓			✓				✓	
Material delivery and storage	✓	✓	✓	✓	✓	✓		✓	✓
Material use during building process		✓	✓	✓	✓	✓		✓	✓
Solid waste (trash and debris)								✓	✓
Hazardous waste			✓	✓	✓	✓			✓
Contaminated spills		✓	✓	✓	✓	✓			✓
Sanitary/septic waste		✓		✓			✓		✓
Vehicle/equipment fueling and maintenance						✓			✓
Vehicle/equipment use and storage						✓			✓
Landscaping operations	✓	✓						✓	

- Runoff coefficient[1] before and after construction
- Soil types
- Construction site location and any nearby waters or wetlands
- Describe and identify the location of other potential sources of stormwater contamination, such as asphalt and concrete plants, stucco operations, paint and concrete washout, and such

Identify Pollutants and Pollution Sources

Identify the pollutants and sources that are likely to be found on the site. The principle pollutant of concern, of course, is sediment. There are, however, other pollutants that may be found, usually in substantially smaller amounts, in stormwater runoff from construction sites. These can include nutrients, heavy metals, organic compounds, pesticides, oil and grease, bacteria and viruses, trash and debris, and other chemicals. After identifying the pollutants and sources, be as specific as possible in your SWPPP about the BMPs you will use to address them. The table at the left lists the sources of pollutants at construction sites, including sediment, the primary pollutant and other pollutants that may be present at construction sites.

Figure 5. Make sure storm drain inlets are protected.

[1] The runoff coefficient is the partial amount of the total rainfall which will become runoff. Runoff coefficients generally range from 0.95 (highly impervious) to 0.05 (vegetated surface that generates little runoff). For more information on calculating the runoff coefficient for your site, see Appendix C.

Non-Stormwater Discharges

Most permits will require you to identify any non-stormwater discharges in your SWPPP. Certain non-stormwater discharges may be allowed under the terms and conditions of your permit, however, you should make every effort to eliminate these discharges where possible. You should identify these sources in your SWPPP and identify pollution prevention measures to ensure that pollutants are not introduced to these discharges and carried to nearby waterbodies.

EPA's CGP identifies these allowable non-stormwater discharges: discharges from fire-fighting activities, fire hydrant flushings, waters used to wash vehicles, buildings, and pavements where detergents are not used, water used to control dust, potable water (including uncontaminated water line flushings), uncontaminated air conditioning condensate, uncontaminated ground water or spring water, among others. The permit goes on to say that non-stormwater discharges should be eliminated or reduced to the extent feasible and that the SWPPP should identify and ensure the implementation of appropriate pollution prevention measures for these discharges. More discussion of pollution prevention measures for some of these non-stormwater sources can be found in Chapter 5.

Permanent Stormwater Controls (Post-Construction)

The topic of designing, installing, and maintaining permanent or post-construction stormwater controls, although a requirement, is beyond the scope of this SWPPP guide. A SWPPP compiled in support of coverage under EPA's Construction General Permit, however, needs to include a description of all permanent stormwater controls that will be constructed along with the buildings, roads, parking lots, and other structures. You should incorporate sediment and erosion controls into your SWPPP for areas where permanent stormwater controls, such as wet ponds, swales, and bioretention cells are to be constructed.

Effectively managing stormwater over the long-term—long after the actual construction process is over—is a significant challenge. Many communities (and a few states) have or are developing comprehensive requirements to better manage permanent (or post-construction) stormwater runoff. To be most effective, you should consider integrating your design process for your permanent stormwater controls into your overall design for your site. Planning for your permanent stormwater controls could affect your decisions about site design, location of buildings and other structures, grading, and preserving natural features. By preserving natural drainage patterns, trees, native vegetation, riparian buffers, and wetlands, you might need to construct fewer or smaller structural storm-water controls to cope with runoff from your site. Permanent stormwater controls should be designed with two important goals in mind: (1) reduction of the volume and velocity of runoff, and (2) reduction of the pollutants in the stormwater that does leave your site.

Techniques, such as *Low Impact Development*, Better Site Design, or *Conservation Development*, which emphasize addressing stormwater where it falls, infiltrating it, preserving natural drainage patterns, and

Take a Closer Look...

Specimen Trees and Natural Vegetation

Before a site plan is prepared, identify and clearly mark existing trees and vegetation you want to preserve. Some communities have tree preservation ordinances, and local extension service offices and foresters will often provide free advice on tree and plant preservation. Remember to notify all employees and subcontractors about trees and areas you intend to preserve and mark them clearly.

What does this mean to me?

Large trees and other native vegetation can represent significant value in the long term to property owners and the community at large. Many studies document that the presence of trees on residential and commercial sites provide many benefits including improved aesthetics, habitat for birds and other wildlife, and energy savings (shade) that ultimately enhance the economic value of the site. Trees also provide shade and act as windbreaks, which can reduce energy costs over the long term. By protecting existing trees, you can reduce landscaping costs and improve the appearance of a newly developed property. According to the National Arbor Day Foundation, trees around a home can increase its value by 15 percent or more.

preserving natural vegetation offer the best opportunity to protect nearby rivers, lakes, wetlands, and coastal waters. **Incorporating these ideas and concepts into the design for your project before it is built also offers the opportunity to reduce capital infrastructure and long-term maintenance costs.**

At the neighborhood or even at the watershed scale, *Smart Growth* techniques can help us design neighborhoods that minimize impacts on water quality, reduce air pollution, and improve the general quality of life for residents. **In the *Resources* list in Appendix D, you will find a list of suggestions on this topic, including how to incorporate Smart Growth and Low Impact Development techniques into the design of your site.**

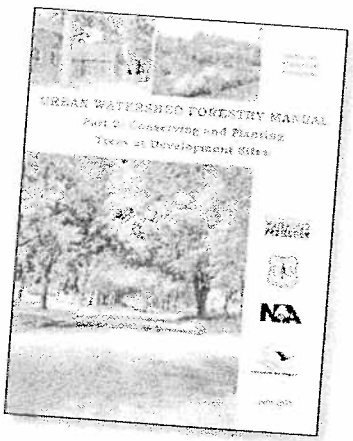
B. Identify Approaches to Protect Natural Resources

Preservation of natural areas, waterbodies, and open space has numerous economic, aesthetic, community, and environmental benefits. Preservation efforts also often increase the value of lots and homes and help to reduce overall expenditures on infrastructure. Specifically, these kinds of conservation efforts can help to significantly reduce the volume and velocity of stormwater runoff and the pollutants that may be carried with it.

SWPPP Tip!

Tree Preservation Resources

For more on tree preservation, contact your local extension service office or forester. Also, American Forests has useful information and tools at their website, **www.americanforests.org/resources/urbanforests**. The Center for Watershed Protection in cooperation with the U.S. Forest Service has developed a series of manuals on urban forestry. Part two, titled Conserving and Planting Trees at Development Sites will be of particular interest. You can find these manuals at **www.cwp.org**



Protect Nearby Waters

Your SWPPP should describe how you will protect and preserve any streams, wetlands, ponds or other waterbodies that are on your property or immediately adjoining it. Riparian areas around headwater streams are especially important to the overall health of the entire river system. Many states and communities have buffer or shoreline protection requirements to preserve sensitive areas around waterbodies.

Many states apply special designations to high-value or high-quality waters. Check with your state water pollution control agency to determine if your project could discharge to *outstanding* or special protection waters (such as wetlands, or salmon and trout streams). You might be subject to additional requirements to protect these waterbodies.

Wetland areas, including bogs, marshes, swamps, and prairie potholes may be found in areas adjacent to rivers, lakes, and coastal waters but may also be found in isolated places far from other surface waters. Many types of wetlands are protected under the Clean Water Act and construction activities in and around these areas may require an additional permit from the Army Corps of Engineers. Construction site operators should make every effort to preserve wetlands and must follow applicable local, state, and federal requirements before disturbing them or the areas around them.

To ensure the protection of natural areas during the construction period, you should use a combination of techniques, including temporary fencing, signage, and educating staff and subcontractors.

Assess Whether Your Project Impacts an Impaired Waterbody

Under the Clean Water Act, states are required to determine if rivers, lakes, and other waters are meeting water quality standards. When a waterbody does not meet water quality standards because of one or more sources of pollution, the state lists the water as impaired. When a water is determined to be impaired, the state or EPA develops a plan for correcting the situation. This plan is called a Total Maximum Daily Load (TMDL). If stormwater from your project could reach an impaired water with or without an approved TMDL (either directly or indirectly through a municipal storm drain system), your permit

may include additional requirements to ensure that your stormwater discharges do not contribute to that impairment and your stormwater controls are consistent with plans to restore that waterbody. Your SWPPP should describe the specific actions you will take to comply with these permit requirements for impaired waters.

You should determine, before you file for permit coverage, if the receiving waters for your project are impaired and if so, whether a TMDL has been developed for this waterbody. Visit EPA's Enviromapper website (**www.epa.gov/waters/enviromapper**) or contact your state environmental agency for more information.

Assess Whether You Have Endangered Plant or Animal Species in Your Area

The federal Endangered Species Act protects endangered and threatened species and their critical habitat areas. (States and tribes may have their own endangered species laws.) In developing the assessment of your site, you should determine whether listed endangered species are on or near your property. Critical habitat areas are often designated to support the continued existence of listed species. You should also determine whether critical habitat areas have been designated in the vicinity of your project. Contact your local offices of the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), or your state or tribal heritage centers. These organizations often maintain lists of federal and state listed endangered and threatened species on their Internet sites. For more information and to locate lists for your state, visit **www.epa.gov/npdes/endangeredspecies**

Additionally, your state's NPDES stormwater permit may specifically require that you address whether the activities and the stormwater discharged by your construction site have the potential to adversely affect threatened or endangered species or the critical habitat areas. You might need to conduct a biological investigation or assessment and document the results of the assessment in your SWPPP. The state may reference federal, state, or tribal endangered species protection laws or regulations.

EPA's Construction General Permit contains detailed procedures to assist construction site operators in determining the likely impact of their projects on any endangered species or critical habitat. Construction site operators in areas covered by EPA's Construction General Permit are required to assess the impact of their activities and associated stormwater discharges on species and habitat in the "project area" which may extend beyond the site's immediate footprint.

Assess Whether You Have Historic Sites that Require Protection

The National Historic Preservation Act, and any state, local and tribal historic preservation laws, apply to construction activities. As with endangered species, some permits may specifically require you to assess the potential impact of your stormwater discharges on historic properties. However, whether or not this is stated as a condition for permit coverage, the National Historic Preservation Act and any applicable state or tribal laws apply to you. Contact your State Historic Preservation Officer (**www.ncshpo.org/stateinfolist/fulllist.htm**) or your Tribal Historic Preservation Officer (**grants.cr.nps.gov/thpo/tribaloffices.cfm**).

C. Develop Site Maps

The final step in the site evaluation process is to document the results of your site assessment and your planned phases of construction activity on a detailed site map or maps. This includes developing site maps showing planned construction activities and stormwater practices for the various major stages of construction, protected areas, natural features, slopes, erodible soils, nearby waterbodies, permanent stormwater controls, and so on. You must keep your SWPPP and your site maps up-to-date to reflect changes at your site during the construction process.

Location Maps

A general location map is helpful to identify nearby, but not adjacent, waterbodies in proximity to other properties. You can use any easily available maps or mapping software to create a location map.

Site Maps

The detailed construction site maps should show the entire site and identify a number of features at the site related to construction activities and stormwater management practices.

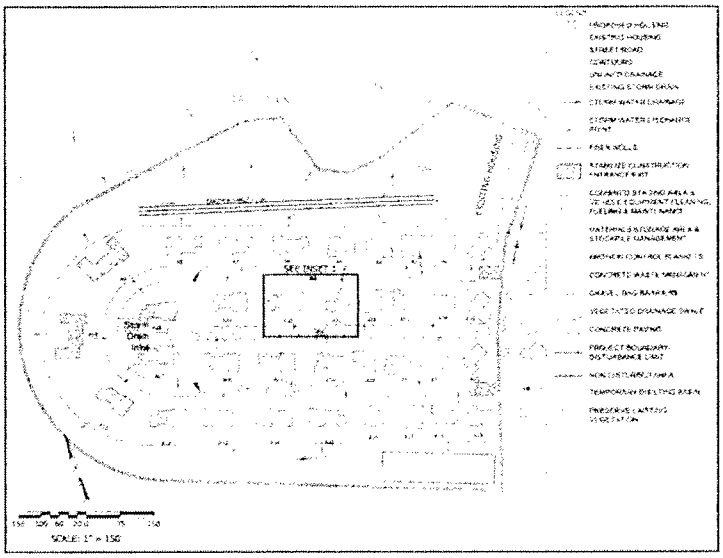


Figure 6. Example site map.

Map of undeveloped or existing site. For many sites, a map of the undeveloped or existing site, noting the features that you identified in Section A of this Chapter, will help you develop your SWPPP and identify current site features that you want to preserve. On this map note current drainage patterns, storm drains, slopes, soil types, waters and other natural features. Also note any existing structures, roads, utilities, and other features.

Map or series of maps for construction plans. Site maps should show the construction activities and stormwater management practices for each major phase of construction (e.g., initial grading, infrastructure, construction, and stabilization). The site maps should legibly identify the following features:

- Stormwater flow and discharges. Indicate flow direction(s) and approximate slopes after grading activities, as well as locations of discharges to surface waters or municipal storm drain systems.
- Areas and features to be protected. Include wetlands, nearby streams, rivers, lakes, and coastal waters, mature trees and natural vegetation, steep slopes, highly erodible soils, etc.
- Disturbed areas. Indicate locations and timing of soil disturbing activities (e.g. grading). Mark clearing limits.
- BMPs. Identify locations of structural and non-structural BMPs identified in the SWPPP, as well as post-construction stormwater BMPs.
- Areas of stabilization. Identify locations where stabilization practices are expected to occur. Mark areas where final stabilization has been accomplished.
- Other areas and roads. Indicate locations of material, waste, borrow, or equipment storage.

You should complete your site maps after reviewing Chapters 4 and 5 and any applicable BMP design manual to select appropriate BMPs for your site.

Use Site Maps to Track Progress

Develop and keep up-to-date site maps showing non-structural BMPs 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 mark up the site map with the location of these BMPs. Indicate the current location of the following:

- Portable toilets
- Material storage areas
- Vehicle and equipment fueling and maintenance areas
- Concrete washouts
- Paint and stucco washouts
- Dumpsters or other trash and debris containers
- Spill kits
- Stockpiles
- Any other non-structural non-stormwater management BMPs
- Any temporarily removed structural BMPs
- Any changes to the structural BMPs

If a marked-up site map is too full to be easily read, you should date and fold it, put it in the SWPPP for documentation, and start a new one. That way, there is a good hard copy record of what has occurred on-site.

Construction sites are dynamic. As conditions change at the construction site, such as the locations of BMPs, your SWPPP must reflect those changes.

Chapter 4: **SWPPP Development—Selecting Erosion and Sediment Control BMPs**

This chapter presents a brief discussion of erosion and sediment control principles and a discussion of some commonly used BMPs.

This document is not intended as an engineering or design manual on BMPs. The engineer or other qualified person that develops the details of your sediment and erosion control plan should be using the appropriate state or local specifications. The descriptions below provide a kind of checklist of the things to look for and some helpful installation and maintenance hints.

Erosion and sediment controls are the structural and non-structural practices used during the construction process to keep sediment in place (erosion control) and to capture any sediment that is moved by stormwater before it leaves the site (sediment control). Erosion controls—keeping soil where it is—are the heart of any effective SWPPP. Your SWPPP should rely on erosion controls as the primary means of preventing stormwater pollution. Sediment controls provide a necessary second line of defense to properly designed and installed erosion controls.

The suite of BMPs that you include in your SWPPP should reflect the specific conditions at the site. The information that you collected in the previous steps should help you select the appropriate BMPs for your site. An effective SWPPP includes a combination or suite of BMPs that are designed to work together.

Ten Keys to Effective Erosion and Sediment Control (ESC)

The ultimate goal of any SWPPP is to protect rivers, lakes, wetlands, and coastal waters that could be affected by your construction project. The following principles and tips should help you build an effective SWPPP. **Keep in mind that there are many BMP options available to you. We have selected a few common BMPs to help illustrate the principles discussed in this chapter.**

Erosion Control (keeping the dirt in place) and Minimizing the Impact of Construction

1. **Minimize disturbed area and protect natural features and soil**
2. **Phase construction activity**
3. **Control stormwater flowing onto and through the project**
4. **Stabilize soils promptly**
5. **Protect slopes**

Sediment Controls (the second line of defense)

6. **Protect storm drain inlets**
7. **Establish perimeter controls**
8. **Retain sediment on-site and control dewatering practices**
9. **Establish stabilized construction exits**
10. **Inspect and maintain controls**

Take a Closer Look...

BMPs in Combination

BMPs work much better when they are used in combination. For instance, a silt fence should not be used alone to address a bare slope. An erosion control BMP should be used to stabilize the slope, and the silt fence should serve as the backup BMP.

What does this mean to me?

Wherever possible, rely on erosion controls to keep sediment in place. Back up those erosion controls with sediment controls to ensure that sediment doesn't leave your site. Continually evaluate your BMPs. Are they performing well? Could the addition of a supplemental BMP improve performance? Should you replace a BMP with another one that might work better? Using BMPs in series also gives you some protection in case one BMP should fail.

Erosion Control and Minimizing the Impact of Construction

ESC Principle 1: Minimize disturbed area and protect natural features and soil. As you put together your SWPPP, carefully consider the natural features of the site that you assessed in Chapter 3. By carefully delineating and controlling the area that will be disturbed by grading or construction activities, you can greatly reduce the potential for soil erosion and stormwater pollution problems. Limit disturbed areas to only those necessary for the construction of your project. Natural vegetation is your best and cheapest erosion control BMP.

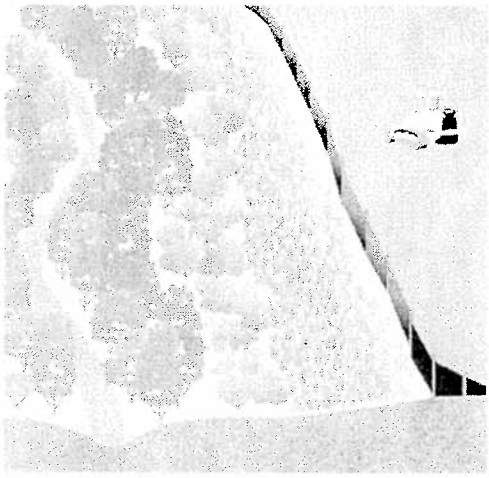


Figure 7. Protect vegetated buffers by using silt fence or other sediment controls.

Protecting and preserving topsoil is also a good BMP. Removing topsoil exposes underlying layers that are often more prone to erosion and have less infiltration capacity. Keeping topsoil in place preserves the natural structure of the soils and aids the infiltration of stormwater.

ESC Principle 2: Phase construction activity. Another technique for minimizing the duration of exposed soil is phasing. By scheduling or sequencing your construction work and concentrating it in certain areas, you can minimize the amount of soil that is exposed to the elements at any given time. Limiting the area of disturbance to places where construction activities are underway and stabilizing them as quickly as possible can be one of your most effective BMPs.

ESC Principle 3: Control stormwater flowing onto and through your project. Plan for any potential stormwater flows coming onto the project area from upstream locations, and divert (and slow) flows to prevent erosion. Likewise, the volume and velocity of on-site stormwater runoff should be controlled to minimize soil erosion.

Example BMP: Diversion Ditches or Berms

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

Installation Tips:

- Divert run-on and runoff away from disturbed areas
- Ensure that the diversion is protected from erosion, using vegetation, geotextiles, or other appropriate BMPs
- Divert sediment-laden water to a sediment-trapping structure
- Use practices that encourage infiltration of stormwater runoff wherever possible

Maintenance:

- Inspect diversions and berms, including any outlets, regularly and after each rainfall
- Remove any accumulated sediment

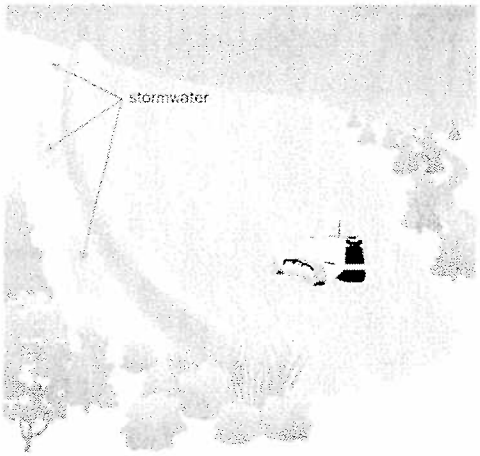


Figure 8. Illustration of a construction berm to divert stormwater away from the disturbed construction area.

ESC Principle 4: Stabilize soils promptly. Where construction activities have temporarily or permanently ceased, you should stabilize exposed soils to minimize erosion. You should have stabilization measures in place after grading activities have ceased (many permits require stabilization within a specified time frame). You can provide either temporary or permanent cover to protect exposed soils. Temporary measures are necessary when an area of a site is disturbed but where activities in that area are not completed or until permanent BMPs are established. Topsoil stockpiles should also be protected to minimize any erosion from these areas. Temporary-cover BMPs include temporary seeding, mulches, matrices, blankets and mats, and the use of soil binders (there may be additional state and local requirements for the use of chemical-based soil binders). Permanent-cover BMPs include permanent seeding and planting, sodding, channel stabilization, and vegetative buffer strips. Silt fence and other sediment control measures are not stabilization measures.

SWPPP Tip!

Final Stabilization

Once construction activity in an area is completed and the area is stabilized (typically by achieving 70 percent permanent vegetative cover), you can mark this area on your SWPPP and discontinue inspections in that area. By bringing areas of your site to final stabilization, you can reduce your workload associated with maintaining and inspecting BMPs. For more information on final stabilization, see Chapter 9.

Example BMP: Temporary Seeding

Description: Temporarily seeding an area to establish vegetative cover is one of the most effective, and least expensive, methods of reducing erosion. This approach, as a single BMP, might not be appropriate on steep slopes, when vegetation cannot be established quickly enough to control erosion during a storm event, or when additional activities might occur soon in the area.

Installation Tips:

- Seed and mulch area (the mulch provides temporary erosion protection by protecting the soil surface, moderating temperature, and retaining moisture while seeds germinate and grow)
- Water regularly, if needed, to ensure quick growth
- Maintain backup BMPs, such as silt fence or settling ponds

SWPPP Tip!

Wind Control BMPs

In areas where dust control is an issue, your SWPPP should include BMPs for wind-erosion control. These consist of mulching, wet suppression (watering), and other practices.

ESC Principle 5: Protect slopes. Protect all slopes with appropriate erosion controls. Steeper slopes, slopes with highly erodible soils, or long slopes require a more complex combination of controls. Erosion control blankets, bonded fiber matrices, or turf reinforcement mats are very effective options. Silt fence or fiber rolls may also be used to help control erosion on moderate slopes and should be installed on level contours spaced at 10- to 20-foot intervals. You can also use diversion channels and berms to keep stormwater off slopes.

Example BMP: Rolled erosion control products

Description: Erosion control products include mats, geotextiles, and erosion control blankets and products that provide temporary stabilization and help to establish vegetation on disturbed soils. Such products help control erosion and help establish vegetation and are often used on slopes, channels, or stream banks.

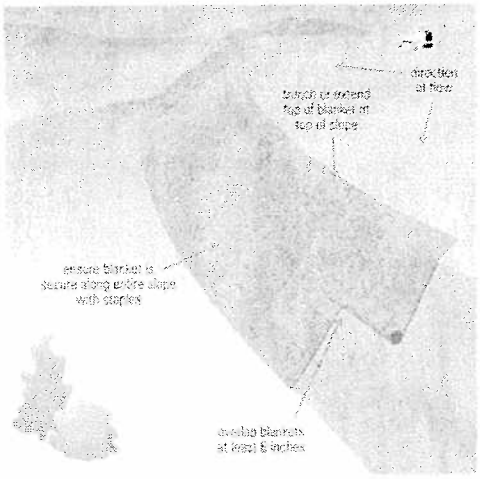


Figure 9. Illustration of erosion control blankets installed on slope.

Installation Tips:

- Use rolled erosion-control products on slopes steeper than 3 to 1 (horizontal to vertical) and in swales or long channels

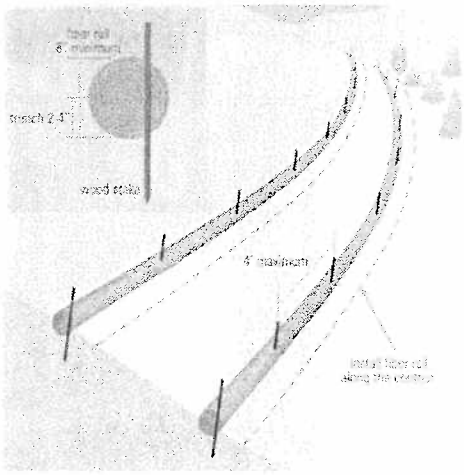


Figure 10. Illustration of a fiber roll installation along a slope.

- Trench the top of the blanket into the ground to prevent runoff from flowing under the blanket
- Overlap the lower end of the top mat over the top of the downslope mat to ensure that runoff stays on top of the blankets and mats
- Staple blankets and mats according to specifications

Maintenance:

- Periodically inspect for signs of erosion or failure
- Repair the blanket or mat if necessary
- Continue inspections until vegetation is established at the level required to qualify as final *stabilization*

ESC Principle 6: Protect storm drain inlets. Protect all inlets that could receive stormwater from the project until final stabilization of the site has been achieved. Install inlet protection before soil-disturbing activities begin. Maintenance throughout the construction process is important. Upon completion of the project, storm drain inlet protection is one of the temporary BMPs that should be removed. Storm drain inlet protection should be used not only for storm drains within the active construction project, but also for storm drains outside the project area that might receive stormwater discharges from the project. If there are storm drains on private property that could receive stormwater runoff from your project, coordinate with the owners of that property to ensure proper inlet protection.

Example BMP: Storm Drain Inlet Protection

Description: Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. Several types of filters are commonly used for inlet protection: silt fence, rock-filled bags, or block and gravel. The type of filter used depends on the inlet type (for example, curb inlet, drop inlet), slope, and volume of flow. Many different commercial inlet filters are also available. Some commercial inlet filters are placed in front of or on top of an inlet, while others are placed inside the inlet under the grate.

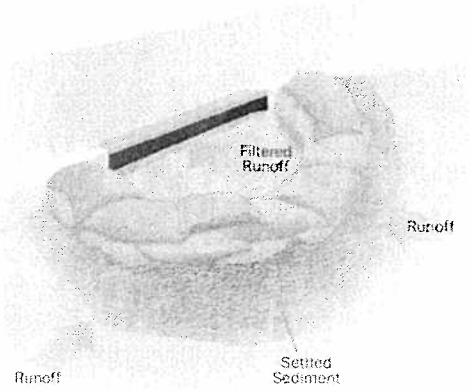


Figure 11. Illustration of a storm drain inlet with rock-filled bags filtering stormwater.

Installation Tips:

- Install inlet protection as soon as storm drain inlets are installed and before land-disturbance activities begin in areas with existing storm drain systems
- Protect all inlets that could receive stormwater from your construction project
- Use in conjunction with other erosion prevention and sediment control BMPs—remember, inlet protection is a secondary BMP!
- Design your inlet protection to handle the volume of water from the area being drained. Ensure that the design is sized appropriately.

Maintenance:

- Inspect inlets frequently and after each rainfall

- Remove accumulated sediment from around the device and check and remove any sediment that might have entered the inlet
- Replace or repair the inlet protection if it becomes damaged
- Sweep streets, sidewalks, and other paved areas regularly

SWPPP Tip!

Storm drain inlet protection should never be used as a primary BMP! Use erosion control techniques such as hydromulching or erosion-control blankets to prevent erosion. Use inlet protection and other sediment control BMPs as a *backup* or last line of defense.

ESC Principle 7: Establish perimeter controls. Maintain natural areas and supplement them with silt fence and fiber rolls around the perimeter of your site to help prevent soil erosion and stop sediment from leaving the site. Install controls on the downslope perimeter of your project (it is often unnecessary to surround the entire site with silt fence). Sediment barriers can be used to protect stream buffers, riparian areas, wetlands, or other waterways. They are effective only in small areas and should not be used in areas of concentrated flow.

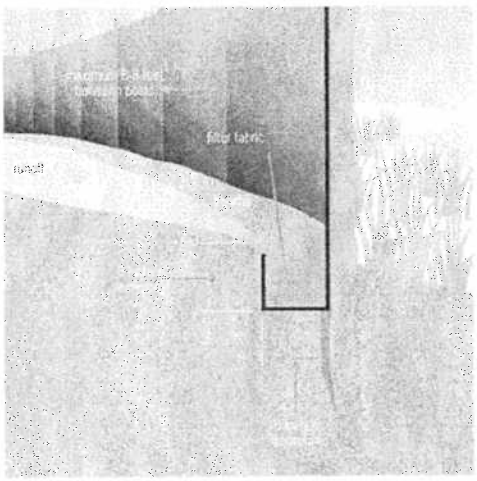


Figure 12. Illustration of proper techniques to use in installing silt fence.

Example BMP: Silt Fence and Fiber Rolls

Description: A silt fence is a temporary sediment barrier consisting of a geotextile attached to supporting posts and trenched into the ground. Silt fencing is intended to retain sediment that has been dislodged by stormwater. It is designed only for runoff from small areas and is not intended to handle flows from large slopes or in areas of concentrated flow. Fiber rolls serve the same purpose and consist of an open mesh tubular sleeve filled with a fibrous material which traps sediment. Fiber rolls are generally staked to the ground.

Installation Tips:

DO:

- Use silt fence or fiber rolls as perimeter controls, particularly at the lower or down slope edge of a disturbed area
- Leave space for maintenance between toe of slope and silt fence or roll
- Trench in the silt fence on the uphill side (6 inches deep by 6 inches wide)
- Install stakes on the downhill side of the fence or roll
- Curve the end of the silt fence or fiber roll up-gradient to help it contain runoff

DON'T:

- Install a silt fence or fiber rolls in ditches, channels, or areas of concentrated flow
- Install it running up and down a slope or hill
- Use silt fencing or fiber rolls alone in areas that drain more than a quarter-acre per 100 feet of fence

Maintenance:

- Remove sediment when it reaches one-third of the height of the fence or one-half the height of the fiber roll
- Replace the silt fence or roll where it is worn, torn, or otherwise damaged
- Retrench or replace any silt fence or roll that is not properly anchored to the ground

ESC Principle 8: Retain sediment on-site and control dewatering practices. Sediment barriers described in ESC Principle 7 can trap sediment from small areas, but when sediment retention from a larger area is required, consider using a temporary sediment trap or sediment basin. These practices detain sediment-laden runoff for a period of time, allowing sediment to settle before the runoff is discharged. Proper design and maintenance are essential to ensure that these practices are effective.

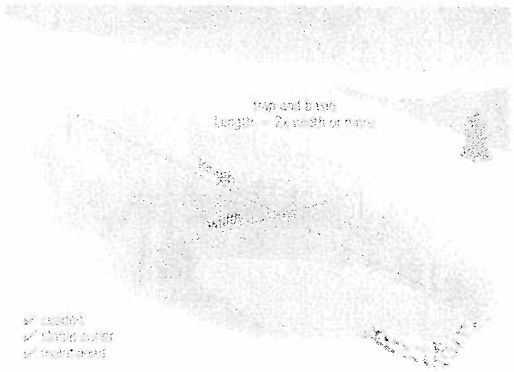


Figure 13. Illustration of a sediment basin.

You should use a sediment basin for common drainage locations that serve an area with 10 or more acres disturbed at any one time. The basin should be designed to provide storage for the volume of runoff from the drainage area for at least a 2-year, 24-hour storm (or 3,600 cubic feet of storage per acre drained, which is enough to contain 1 inch of runoff, if the 2-year, 24-hour calculation has not been performed). Check your permit for exact basin sizing requirements. Sediment basins should be located at low-lying areas of the site and on the down-gradient side of bare soil areas where flows converge. Do not put sediment traps or basins in or immediately adjacent to flowing streams or other waterways.

Where a large sediment basin is not practical, use smaller sediment basins or sediment traps (or both) where feasible. At a minimum, use silt fences, vegetative buffer strips, or equivalent sediment controls for all down-gradient boundaries (and for those side-slope boundaries deemed appropriate for individual site conditions).

Dewatering practices are used to remove ground water or accumulated rain water from excavated areas. Pump muddy water from these areas to a temporary or permanent sedimentation basin or to an area completely enclosed by silt fence in a flat vegetated area where discharges can infiltrate into the ground. Never discharge muddy water into storm drains, streams, lakes, or wetlands unless the sediment has been removed before discharge.

Keep in mind that some states and local jurisdictions require a separate permit for dewatering activities at a site.

ESC Principle 9: Establish stabilized construction exits. Vehicles entering and leaving the site have the potential to track significant amounts of sediment onto streets. Identify and clearly mark one or two locations where vehicles will enter and exit the site and focus stabilizing measures at those locations. Construction entrances are commonly made from large crushed rock. They can be further stabilized using stone pads or concrete. Also, steel wash racks and a hose-down system will remove even more mud and debris from vehicle tires. Divert runoff from wash areas to a sediment trap or basin. No system is perfect, so sweeping the street regularly completes this BMP.

Example BMP: Stabilized Construction Exit

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

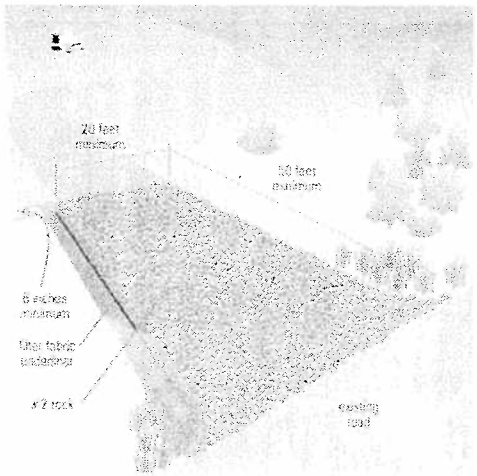


Figure 14. Illustration of a stabilized construction exit.

You might also want to install a wheel wash when mud is especially difficult to remove or space doesn't allow sufficient tire revolutions (four or five are needed) before exiting the site. Direct wash water to a suitable settling area—do not discharge wash water to a stream or storm drain!

Installation tips:

- Ensure that the exit is at least 50 feet long (generally, the length of two dump trucks) and graded so runoff does not enter the adjacent street
- Place a geotextile fabric under a layer of aggregate at least 6–12 inches thick. The stones or aggregate should be 3–6 inches in diameter
- Train employees and subcontractors to use the designated construction exits. Empower your employees to provide directions to subcontractors and others that are not on the site every day

Maintenance:

- Replenish or replace aggregate if it becomes clogged with sediment
- Sweep the street regularly

ESC Principle 10: Inspect and maintain controls. Inspection and maintenance is just as important as proper planning, design, and installation of controls. Without adequate maintenance, erosion and sediment controls will quickly fail, sometimes after just one rainfall, and cause significant water quality problems and potential violations of the NPDES construction general permit. Your permit likely requires you to maintain your BMPs at all times. To do this effectively, you should establish an inspection and maintenance approach or strategy that includes both regular and spot inspections. Inspecting both prior to predicted storm events and after will help ensure that controls are working effectively. Perform maintenance or corrective action as soon as problems are noted. **Inspection and maintenance of BMPs are addressed in more detail in Chapter 6.**

Other Sediment and Erosion Control Techniques

As mentioned at the beginning of this chapter, there are many other erosion and sediment control techniques that can be used effectively. The BMPs highlighted in this chapter are among those more commonly used and highlight many general erosion and sediment control principles for which other BMPs may be used effectively. Check to see if your state or local government has developed a BMP design manual for detailed information on any BMP you are considering. Appendix D lists several good BMP design manuals. You can also find out more about various BMPs by visiting EPA's Menu of BMPs at **www.epa.gov/npdes/menuofbmps**

The following BMPs are also commonly used at construction sites.

Erosion control measures:

- Surface roughening, trackwalking, scarifying, sheepsfoot rolling, imprinting
- Soil bioengineering techniques (e.g., live staking, fascines, brush wattles)
- Composting
- Sodding

Sediment control and runoff management measures:

- Gravel bag barrier
- Compost berm
- Rock or brush filters
- Baffles or skimmers in sediment basins to increase effectiveness
- Lowering soil levels near streets and sidewalks to prevent runoff
- Level spreaders
- Energy dissipaters
- Check dams

Chapter 5: **SWPPP Development—Selecting Good Housekeeping BMPs**

▶ **This chapter presents a brief discussion of good housekeeping principles to consider to ensure your construction site does not contaminate stormwater runoff.**

As noted in Chapter 3, sediment is the principal pollutant of concern in stormwater discharges from construction sites. But, EPA's CGP and many state construction general permits require that the SWPPP describe good housekeeping measures for other pollutants that might be found on construction sites. This chapter discusses these measures.

Six Key Pollution Prevention Principles for Good Housekeeping

Construction projects generate large amounts of building-related waste, which can end up polluting stormwater runoff if not properly managed. The suite of BMPs that are described in your SWPPP must include pollution prevention (P2) or good housekeeping practices that are designed to prevent contamination of stormwater from a wide range of materials and wastes at your site. The six principles described below are designed to help you identify the pollution prevention practices that should be described in your SWPPP and implemented at your site.

1. Provide for waste management
2. Establish proper building material staging areas
3. Designate paint and concrete washout areas
4. Establish proper equipment/vehicle fueling and maintenance practices
5. Control equipment/vehicle washing and allowable non-stormwater discharges
6. Develop a spill prevention and response plan

P2 Principle 1: Provide for waste management. Design proper management procedures and practices to prevent or reduce the discharge of pollutants to stormwater from solid or liquid wastes that will be generated at your site. Practices such as trash disposal, recycling, proper material handling, and cleanup measures can reduce the potential for stormwater runoff to pick up construction site wastes and discharge them to surface waters.

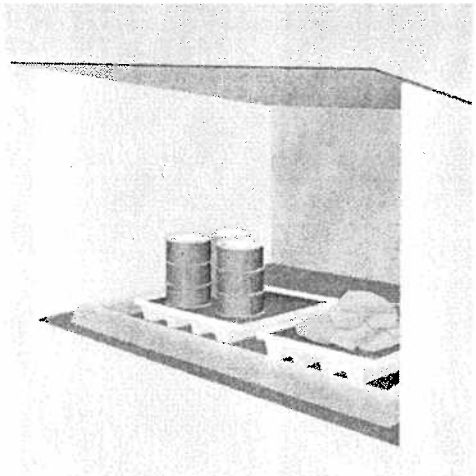


Figure 15. Illustration showing construction materials with secondary containment and overhead cover to prevent stormwater contamination.

Provide convenient, well-maintained, and properly located toilet facilities. Provide for regular inspections, service, and disposal. Locate toilet facilities away from storm drain inlets and waterways to prevent accidental spills and contamination of stormwater. Treat or dispose of sanitary and septic waste in accordance with state or local regulations.

Proper material use, storage, waste disposal, and training of employees and subcontractors can prevent or reduce the discharge of hazardous and toxic wastes to stormwater. Implement a comprehensive set of waste-management practices for hazardous or toxic materials, such as paints, solvents, petroleum products, pesticides, wood preservatives, acids, roofing tar, and other materials. Practices should include storage, handling, inventory, and cleanup procedures, in case of spills (see the following P2 principles).

Waste Management Checklist

Solid or Construction Waste

- ✓ Designate trash and bulk waste-collection areas on-site
- ✓ Recycle materials whenever possible (e.g., paper, wood, concrete, oil)
- ✓ Segregate and provide proper disposal options for hazardous material wastes
- ✓ Clean up litter and debris from the construction site daily
- ✓ Locate waste-collection areas away from streets, gutters, watercourses, and storm drains. Waste-collection areas (dumpsters, and such) are often best located near construction site entrances to minimize traffic on disturbed soils. Consider secondary containment around waste collection areas to further minimize the likelihood of contaminated discharges.

Sanitary and Septic Waste

- ✓ Provide restroom facilities on-site
- ✓ Maintain clean restroom facilities and empty porta-johns regularly
- ✓ Provide secondary containment pans under porta-johns, where possible
- ✓ Provide tie-downs or stake downs for porta-johns in areas of high winds
- ✓ Educate employees, subcontractors, and suppliers on locations of facilities
- ✓ Do not discharge or bury wastewater at the construction site
- ✓ Inspect facilities for leaks, repair or replace immediately

Hazardous Materials and Wastes

- ✓ Develop and implement employee and subcontractor education, as needed, on hazardous and toxic waste handling, storage, disposal, and cleanup
- ✓ Designate hazardous waste-collection areas on-site
- ✓ Place all hazardous and toxic material wastes in secondary containment
- ✓ Hazardous waste containers should be inspected to ensure that all containers are labeled properly and that no leaks are present

P2 Principle 2: Establish proper building material handling and staging areas. Your SWPPP should include comprehensive handling and management procedures for building materials, especially those that are hazardous or toxic. Paints, solvents, pesticides, fuels and oils, other hazardous materials or any building materials that have the potential to contaminate stormwater should be stored indoors or under cover whenever possible or in areas with secondary containment. Secondary containment prevents a spill from spreading across the site and include dikes, berms, curbing, or other containment methods. Secondary containment techniques should also ensure the protection of ground water. Designate staging areas for activities such as fueling vehicles, mixing paints, plaster, mortar, and so on. Designated staging areas will help you to monitor the use of materials and to clean up any spills. Training employees and subcontractors is essential to the success of this pollution prevention principle.

SWPPP Tip!

Material Staging Area Measures

Your SWPPP should include procedures for storing materials that can contribute pollutants to stormwater. Consider the following:

- Train employees and subcontractors in proper handling and storage practices
- Designate site areas for storage. Provide storage in accordance with secondary containment regulations and provide cover for hazardous materials when necessary. Ensure that storage containers are regularly inspected for leaks, corrosion, support or foundation failure, or any other signs of deterioration and tested for soundness
- Reuse and recycle construction materials when possible

P2 Principle 3: Designate washout areas. Concrete contractors should be encouraged, where possible, to use the washout facilities at their own plants or dispatch facilities. If it is necessary to provide for concrete washout areas on-site, designate specific washout areas and design facilities to handle anticipated washout water. Washout areas should also be provided for paint and stucco operations. Because washout areas can be a source of pollutants from leaks or spills,

EPA recommends that you locate them at least 50 yards away from storm drains and watercourses whenever possible.

Several companies rent or sell prefabricated washout containers, and some provide disposal of waste solids and liquids along with the containers. These prefabricated containers are sturdy and provide a more reliable option for preventing leaks and spills of wash water than self-constructed washouts. Alternatively, you can construct your own washout area, either by digging a pit and lining it with 10 mil plastic sheeting or creating an aboveground structure from straw bales or sandbags with a plastic liner. If you create your own structure, you should inspect it daily for leaks or tears in the plastic because these structures are prone to failure.

Regular inspection and maintenance are important for the success of this BMP. Both self-constructed and prefabricated washout containers can fill up quickly when concrete, paint, and stucco work are occurring on large portions of the site. You should also inspect for evidence that contractors are using the washout areas and not dumping materials onto the ground or into drainage facilities. If the washout areas are not being used regularly, consider posting additional signage, relocating the facilities to more convenient locations, or providing training to workers and contractors.

SWPPP Tip!

Washout Area Measures

When concrete, paint, or stucco is part of the construction process, consider these practices which will help prevent contamination of stormwater. Include the locations of these areas and your maintenance and inspection procedures in your SWPPP.

- Do not washout concrete trucks or equipment into storm drains, streets, gutters, uncontained areas, or streams
- Establish washout areas and advertise their locations with signs
- Provide adequate containment for the amount of wash water that will be used
- Inspect washout structures daily to detect leaks or tears and to identify when materials need to be removed
- Dispose of materials properly. The preferred method is to allow the water to evaporate and to recycle the hardened concrete. Full service companies may provide dewatering services and should dispose of wastewater properly. Concrete wash water can be highly polluted. It should not be discharged to any surface water, storm sewer system, or allowed to infiltrate into the ground. It should not be discharged to a sanitary sewer system without first receiving written permission from the system operator

P2 Principle 4: Establish proper equipment/vehicle fueling and maintenance practices. Performing equipment/vehicle fueling and maintenance at an off-site facility is preferred over performing these activities on the site, particularly for road vehicles (e.g., trucks, vans). For grading and excavating equipment, this is usually not possible or desirable. Create an on-site fueling and maintenance area that is clean and dry. The on-site fueling area should have a spill kit, and staff should know how to use it. If possible, conduct vehicle fueling and maintenance activities in a covered area; outdoor vehicle fueling and maintenance is a potentially significant source of stormwater pollution. Significant maintenance on vehicles and equipment should be conducted off-site.

SWPPP Tip!

Equipment/Vehicle Fueling and Maintenance Measures

Consider the following practices to help prevent the discharge of pollutants to stormwater from equipment/vehicle fueling and maintenance. Include the locations of these areas and your inspection and maintenance procedures in your SWPPP.

- Train employees and subcontractors in proper fueling procedures (stay with vehicles during fueling, proper use of pumps, emergency shut-off valves, and such)
- Inspect on-site vehicles and equipment daily for leaks, equipment damage, and other service problems
- Clearly designate vehicle/equipment service areas away from drainage facilities and watercourses to prevent stormwater run-on and runoff
- Use drip pans, drip cloths, or absorbent pads when replacing spent fluids
- Collect all spent fluids, store in appropriate labeled containers in the proper storage areas, and recycle fluids whenever possible

P2 Principle 5: Control equipment/vehicle washing and allowable non-stormwater discharges. Environmentally friendly washing practices can be practiced at every construction site to prevent contamination of surface and ground water from wash water. Procedures and practices include using off-site facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water or routing to the sanitary sewer; and training employees and subcontractors in proper cleaning procedures.

Take a Closer Look...

Non-Stormwater Runoff

A construction site might have sources of runoff that are not generated by stormwater. These non-stormwater discharges include fire hydrant flushing, vehicle or equipment wash water (no detergents!), water used to control dust, and landscape irrigation.

What does this mean to me?

Take steps to infiltrate these sources of uncontaminated water into the ground. You can also route these sources of water to sediment ponds or detention basins or otherwise treat them with appropriate BMPs.

SWPPP Tip!

Equipment/Vehicle Washing Measures

The following equipment/vehicle washing measures will help prevent stormwater pollution. Include the location of your washing facilities and your inspection and maintenance procedures in your SWPPP.

- Educate employees and subcontractors on proper washing procedures
- Clearly mark the washing areas and inform workers that all washing must occur in this area
- Contain wash water and treat and infiltrate it whenever possible
- Use high-pressure water spray at vehicle washing facilities without any detergents because water can remove most dirt adequately
- Do not conduct any other activities, such as vehicle repairs, in the wash area

P2 Principle 6: Develop a spill prevention and response plan. Most state and EPA construction general permits require the preparation of spill prevention and response plans. Generally, these plans can be included or incorporated into your SWPPP. The plan should clearly identify 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 response. The plan should also specify material handling procedures and storage requirements and ensure that clear and concise spill cleanup procedures are provided and posted for areas in which spills may potentially occur. When developing a spill prevention plan, include, at a minimum, the following:

- Note the locations of chemical storage areas, storm drains, tributary drainage areas, surface waterbodies on or near the site, and measures to stop spills from leaving the site
- Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities to request assistance
- Describe the procedures for immediate cleanup of spills and proper disposal
- Identify personnel responsible for implementing the plan in the event of a spill

SWPPP Tip!

Spill Prevention Measures

Additional spill prevention measures that will help prevent spills and leaks include the following:

- Describe and list all types of equipment to be used to adequately clean up the spill
- Provide proper handling and safety procedures for each type of waste
- Establish an education program for employees and subcontractors on the potential hazards to humans and the environment from spills and leaks
- Update the spill prevention plan and clean up materials as changes occur to the types of chemicals stored and used at the facility

Take a Closer Look...

Spill Prevention, Control and Countermeasure (SPCC) Plan

Construction sites may be subject to 40 CFR Part 112 regulations that require the preparation and implementation of a SPCC Plan to prevent oil spills from aboveground and underground storage tanks. Your facility is subject to this rule if you are a nontransportation-related facility that:

- Has a total storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons and
- Could reasonably be expected to discharge oil in quantities that may be harmful to navigable waters of the United States and adjoining shorelines

Furthermore, if your facility is subject to 40 CFR Part 112, your SWPPP should reference the SPCC Plan. To find out more about SPCC Plans, see EPA's website on SPPC at **www.epa.gov/oilspill/spcc.htm**

What does this mean to me?

Reporting Oil Spills

In the event of an oil spill, you should contact the National Response Center toll free at 1-800-424-8802 for assistance, or for more details, visit their website: ***www.nrc.uscg.mil/nrchp.html***

Chapter 6: **SWPPP Development—Inspections, Maintenance, and Recordkeeping**

This chapter describes the inspection and maintenance procedures your SWPPP should include, as well as recordkeeping requirements.

A. Describe Your Plans and Procedures for Inspecting BMPs

Earlier discussions in this manual pointed out that the effectiveness of erosion and sediment control BMPs and good housekeeping and pollution prevention measures depend on consistent and continual inspection and maintenance. This step focuses on developing a plan for BMP inspection and maintenance to ensure that a schedule and procedures are in place.

Inspections

Your responsibility does not stop after BMPs are installed. Your BMPs must be maintained in good working order at all times. Further, your permit requires that you conduct regular inspections and document the findings of those inspections in your SWPPP.

Your construction general permit describes the ***minimum*** frequency of inspections, which is typically weekly or bi-weekly and after each rainfall event exceeding one-half inch. To meet the requirement to maintain all BMPs in good working order, EPA recommends that you develop an inspection schedule that goes beyond these minimums and is customized for your site and the conditions affecting it.

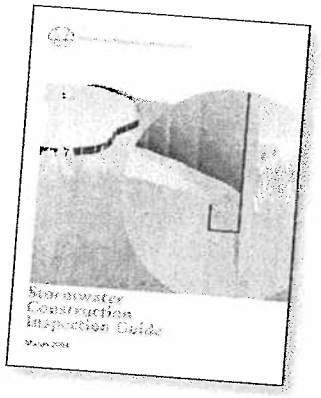
In developing your inspection schedule consider the following:

- Consider using *spot* inspections. You may want to inspect certain parts of your site more frequently or even daily. Target places that need extra attention, such as areas around construction site entrances, check nearby streets for dirt, check inlet protection, and so on.
- Consider using informal inspections. Your permit outlines the minimum requirements for formal inspections that must be documented and included in your SWPPP. You can also add informal inspections that wouldn't require documentation, unless of course, a problem is identified. Always document any problems you find and those that are identified by staff.
- Consider adding inspections *before or even during* rain events. Many permits require inspections of BMPs after rain events. You should consider adding inspections ***before or during*** predicted rain events. Consult a local weather source and initiate inspections before predicted storm events as a way to ensure that controls are operational.

SWPPP Tip

Inspection Guide

The State of Minnesota has developed a *Stormwater Construction Inspection Guide* to assist municipal site inspectors in procedures for conducting a compliance inspection at construction sites. This guide can also be useful for construction operators conducting self-inspections. Available at **www.pca.state.mn.us/water/stormwater/stormwatr-c.html**



- Train staff and subcontractors. Use your staff and subcontractors to help identify any potential problems with your BMPs. Again, document any issues that are confirmed problems.

EPA recommends that you develop an inspection schedule that meets the needs of your site. You'll probably also want to update and refine this schedule based on your experiences, the findings of your inspections, and the changing conditions at your site.

SWPPP Tip!

Selecting BMP inspectors

A BMP inspection is only as good as the inspector. Therefore, it is important to select qualified personnel to conduct BMP inspections. The SWPPP should identify who has the responsibility for conducting inspections. Personnel selected to conduct inspections should be knowledgeable in the principles and practices of erosion and sediment controls, possess the technical skills to assess conditions at the construction site that could impact stormwater quality, and assess the effectiveness of any sediment and erosion control measures selected.

Several states and other organizations offer training that will help prepare inspectors to accurately evaluate BMPs, decide when maintenance is appropriate, or when a different BMP should be substituted. (Several states require that sites be inspected by someone that the state certifies as a qualified inspector.) One national organization offers two certification programs that would be useful for personnel who are developing and implementing SWPPPs and conducting inspections. These certification programs are called: *"Certified Professional in Erosion and Sediment Control (CPESC)"* and *"Certified Professional in Stormwater Quality (CPSWQ)."* You can find more information on these programs at **www.cpesc.org**

Inspection Reports

Complete an inspection report after each inspection. You should retain copies of all inspection reports and keep them with or in your SWPPP. Generally, the following information is required to be included in your inspection report:

- Inspection date
- Inspector information, including the names, titles, and qualifications of personnel conducting the inspection
- Weather information for the period since the last inspection (or for the first inspection since commencement of construction activity) including a best estimate of the beginning of each storm, its duration, approximate amount of rainfall for each storm (in inches), and whether any discharges occurred. You may create a log to record the basic weather information or you may keep copies of weather information from a reliable local source, such as the internet sites of local newspapers, TV stations, local universities, etc.
- Current weather information and a description of any discharges occurring at the time of the inspection
- Descriptions of evidence of previous or ongoing discharges of sediment or other pollutants from the site
- Location(s) of BMPs that need to be maintained
- Location(s) of BMPs that failed to operate as designed or proved inadequate for a location
- Location(s) where additional BMPs are needed but did not exist at the time of inspection
- Corrective action required, including any necessary changes to the SWPPP and implementation dates
- Reference to past corrective actions documenting follow-up actions taken

Consider taking digital photographs during inspections to document BMPs, problems identified, and progress in implementing the SWPPP.

Appendix B includes an example stormwater inspection report. You should use this report, or a similar report, to document your stormwater construction site inspections. Check to see if your state or local authority has developed an inspection checklist for your use. The inspection report is broken up into two main sections—site-specific BMPs and overall site issues. For the site-specific BMPs, you should number the structural and non-structural BMPs in your SWPPP on a copy of your site map (preferably in the order in which you would inspect them on the site). Then as you conduct your inspections, you can verify whether each BMP has been installed and maintained. If a BMP has not been installed or needs maintenance, describe this in the corrective action section and list a date for when the corrective action will be completed and who will be responsible for completing the action. The overall site issues section describes 11 common issues at construction sites you should inspect for. You can customize this form to meet the needs of your particular situation.

Make sure each inspection report is signed and certified consistent with your permit's requirements.

Chapter 8, Section D contains more information on implementing an inspection program. Also, see the suggested inspection report form in Appendix B.

SWPPP Tip!

Consider More Effective BMPs

During inspections, consider whether the installed BMPs are working effectively. If you find a BMP that is failing or overwhelmed by sediment, you should consider whether it needs to be replaced with a more effective BMP or enhanced by the addition of another, complimentary BMP. Ensure that you record such changes in your SWPPP and on your site map.

B. BMP Maintenance

Implementing a good BMP maintenance program is essential to the success of your SWPPP and to your efforts to protect nearby waterways. You should conduct maintenance of BMPs regularly and whenever an inspection (formal or informal) identifies a problem or potential issue. For instance, trash and debris should be cleaned up, dumpsters should be checked and covered, nearby streets and sidewalks should be swept daily, and so on. Maintenance on erosion and sediment controls should be performed as soon as site conditions allow. Consider the following points when conducting maintenance:

- Follow the designers or manufacturer's recommended maintenance procedures for all BMPs
- Maintenance of BMPs will vary according to the specific area and site conditions
- Remove sediment from BMPs as appropriate and properly dispose of sediment into controlled areas to prevent soil from returning to the BMP during subsequent rain events
- Remove sediment from paved roadways and from around BMPs protecting storm drain inlets
- Ensure that construction support activities, including borrow areas, waste areas, contractor work areas, and material storage areas and dedicated concrete and asphalt batch plants are cleaned and maintained
- Replace damaged BMPs, such as silt fences, that no longer operate effectively

You should keep a record of all maintenance activities, including the date, BMP, location, and maintenance performed in your SWPPP.

C. Recordkeeping

You must keep copies of the SWPPP, inspection records, copies of all reports required by the permit, and records of all data used to complete the NOI to be covered by the permit for a period of at least 3 years from the date that permit coverage expires or is terminated.

Records should include:

- A copy of the SWPPP, with any modifications
- A copy of the NOI and Notice of Termination (NOT) and any stormwater-related correspondence with federal, state, and local regulatory authorities
- Inspection forms, including the date, place, and time of BMP inspections
- Names of inspector(s)
- The date, time, exact location, and a characterization of significant observations, including spills and leaks
- Records of any non-stormwater discharges
- BMP maintenance and corrective actions taken at the site (Corrective Action Log)
- Any documentation and correspondence related to endangered species and historic preservation requirements
- Weather conditions (e.g., temperature, precipitation)
- Date(s) when major land disturbing (e.g. clearing, grading, and excavating) activities occur in an area
- Date(s) when construction activities are either temporarily or permanently ceased in an area
- Date(s) when an area is either temporarily or permanently stabilized

Chapter 7: **Certification and Notification**

This chapter describes how, after developing your SWPPP, you can obtain permit coverage for your stormwater discharges.

A. Certification

Signature and Certification

The construction site operator must sign the permit application form, which is often called a *Notice of Intent* or *NOI*. (In some instances, the construction general permit may not require the submission of an NOI or application. Construction activities may be covered automatically.)

All reports, including SWPPPs and inspection reports, generally must be signed by the construction site operator or a duly authorized representative of that person. The authorized representative is typically someone who has direct responsibility for implementing the SWPPP. If the operator chooses to designate an authorized representative, a signed letter or statement to that effect must be included in the SWPPP. Check your permit for exact requirements.

Your SWPPP must include the signature of the construction site operator or authorized representative and the certification statement provided in the general permit. An example of the certification language from EPA's Construction General Permit follows:

> "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."

This ensures that the SWPPP was developed and reviewed by a responsible party with the ability to implement the BMPs and other commitments described in the SWPPP.

Copy of Permit Requirements

Most general permits require you to keep a copy of the permit and your NOI with your SWPPP. This allows you to quickly check the permit if a question arises about a permit requirement.

SWPPP Tip!

Posting a sign at the construction entrance

EPA and many state general permits require that you post a sign or other notice conspicuously near the main entrance of the construction site. EPA's permit requires that the sign contain a copy of the NOI, the location of the SWPPP, and a contact person for viewing the SWPPP.

Other State, Tribal, and Local Programs

Include in your SWPPP a description of any other federal, state, tribal, or local requirements for erosion and sediment control and stormwater management that apply to your site. Many local governments also impose erosion and sediment control requirements; your SWPPP should comply with both the general permit and any applicable local requirements.

SWPPP Tip!

Making your SWPPP available

While EPA and most states do not require you to submit a copy of your SWPPP for review, your SWPPP must be available to these and other government agencies for inspection. Your permit may also require you to make your SWPPP available to the public, if requested. If you have the ability, you should consider posting your SWPPP on the Internet and publicizing the URL. Check your permit for exact requirements.

B. Notification

Now that you have developed your SWPPP and before you begin construction, you must begin the process of obtaining permit coverage from your authorized state or EPA. Authorized states and EPA use *general* permits to cover all construction sites. These broadly written general or *umbrella* permits apply to all construction activities in a given state.

Obtaining Coverage Under a General Permit

Important! Before obtaining permit coverage, you should read a copy of the appropriate construction general permit *and* develop your SWPPP.

To obtain coverage under a state or EPA construction general permit, you will typically need to fill out and submit an application form, often called a Notice of Intent or NOI. Submitting this form to the permitting authority indicates your *intent* to be authorized to discharge stormwater under the appropriate general permit for construction activities. Depending on the permit, you may be authorized to discharge immediately or at some later time. In some cases, you are not authorized to discharge until the state has notified you accordingly. EPA's Construction General Permit requires a 7-day waiting period after a complete NOI is received and posted on EPA's website (**www.epa.gov/npdes/noisearch**). The waiting period expires when the permit's status changes from *waiting* to *active*.

Take a Closer Look...

Information on the Application or Notice of Intent (NOI)

The NOI provides the permitting authority with pertinent information about your construction site, such as owner/operator information, site location, estimated project start and completion dates, approximate area to be disturbed, information about your SWPPP, receiving waters, and endangered species review certification. An appropriate person who is authorized to represent your organization must sign and verify that the facts contained in the NOI are true and accurate. For businesses, a certifying official is typically a corporate officer, such as a president, vice president, or manager of operations. For municipalities, it's typically a principal executive officer or ranking elected official. Check your permit for exact signature requirements.

In general, the only information you need to submit to the permitting authority is the NOI. EPA and most authorized state agencies do not require you to submit your SWPPP for approval. However, many local governments review and approve at least the erosion and sediment control component of your SWPPP.

What does this mean to me?

There are significant penalties for failing to obtain authorization to discharge or for submitting inaccurate information. If you are the certifying official, make sure you are authorized to discharge before construction activities begin.

SWPPP Tip!

Deadline for submitting NOIs under EPA's Construction General Permit

For EPA's construction general permit, the fastest and easiest way to obtain permit coverage is to use EPA's electronic permit application system, called "eNOI" at **www.epa.gov/npdes/stormwater/enoi**. Using this approach, you may be authorized to discharge in as little as 7 days after submission of your electronic NOI. If you choose to submit your NOI by mail, EPA recommends that you send it at least one month before you need permit coverage.

Chapter 8: **SWPPP Implementation**

Your SWPPP is your guide to preventing stormwater pollution. However, it is just a plan. Implementing your SWPPP, maintaining your BMPs, and then constantly reevaluating and revising your BMPs and your SWPPP are the keys to protecting your local waterways.

A. Train Your Staff and Subcontractors

Your site's construction workers and subcontractors might not be familiar with stormwater BMPs, and they might not understand their role in protecting local rivers, lakes and coastal waters. Training your staff and subcontractors in the basics of erosion control, good housekeeping, and pollution prevention is one of the most effective BMPs you can institute at your site.

Basic training should include

- Spill prevention and cleanup measures, including the prohibition of dumping any material into storm drains or waterways
- An understanding of the basic purpose of stormwater BMPs, including what common BMPs are on-site, what they should look like, and how to avoid damaging them
- Potential penalties associated with stormwater noncompliance

Staff directly responsible for implementing the SWPPP should receive comprehensive stormwater training, including

- The location and type of BMPs being implemented
- The installation requirements and water quality purpose for each BMP
- Maintenance procedures for each of the BMPs being implemented
- Spill prevention and cleanup measures
- Inspection and maintenance recordkeeping requirements

You can train staff and subcontractors in several ways: short training sessions (food and refreshments will help increase attendance), posters and displays explaining your site's various BMPs, written agreements with subcontractors to educate their staff members, signs pointing out BMPs and reminders to keep clear of them. Every construction site operator should try to train staff and subcontractors to avoid damaging BMPs. By doing so, operators can avoid the added expense of repairs.

SWPPP Tip!

Train your staff and subcontractors!

Here are a few key things you will want to cover with each person working on your site:

- Use only designated construction site entrances
- Keep equipment away from silt fences, fiber rolls, and other sediment barriers
- Know the locations of disposal areas, and know the proper practices for trash, concrete and paint washout, hazardous chemicals, and so on
- Keep soil, materials, and liquids away from paved areas and storm drain inlets. Never sweep or wash anything into a storm drain
- Know the location and understand the proper use of spill kits
- Know the locations of your site's designated protection areas. Keep equipment away from stream banks, valuable trees and shrubs, and steep slopes. Clearly mark these areas with signs
- Keep equipment off mulched, seeded, or stabilized areas. Post signs on these areas, too
- Know who to contact when problems are identified!

B. Ensure Responsibility—Subcontractor Agreements

At any given site, there might be multiple parties (developer, general contractor, builders, subcontractors) that have roles and responsibilities for carrying out or maintaining stormwater BMPs at a given site. These roles and responsibilities should be documented clearly in the SWPPP (see Chapter 2, Section D). In some cases (state requirements vary), there may be one entity that has developed the SWPPP and filed for permit coverage and, therefore, is designated as the *operator.* When other parties at a site are not officially designated as operators, many operators are incorporating the roles and responsibilities of these *non-operators* in the agreements and contracts they have with these companies and individuals. This contract language should spell out responsibilities implementing and maintaining stormwater BMPs, for training staff, and for correcting damage to stormwater BMPs on the site. Several states have stormwater regulations that hold other parties liable even if they are not identified as the *operator.*

C. Implement Your SWPPP Before Construction Starts

Once you have obtained permit coverage and you are ready to begin construction, it is time to implement your SWPPP. You must implement appropriate parts of your SWPPP before construction activity begins. This generally involves installing storm drain inlet protection, construction entrances, sediment basins, and perimeter silt fences before clearing, grading, and excavating activities begin.

After construction activities begin, your SWPPP should describe when additional erosion and sediment controls will be installed (generally after initial clearing and grading activities are complete). You should also begin BMP inspections once clearing and grading activities begin.

SWPPP Tip!

Take Photographs During Inspections

Taking photographs can help you document areas that need maintenance and can help identify areas where subcontractors might need to conduct maintenance. Photographs can also help provide documentation to EPA or state inspectors that maintenance is being performed.

SWPPP Tip!

Prepare for the rain and snowmelt!

In some areas of the country, construction site operators are required to develop *weather triggered* action plans that describe additional activities the operator will conduct 48 hours before a predicted storm (at least a 50 percent forecasted chance of rain). It is also a good idea to stockpile additional erosion and sediment control BMPs (such as silt fencing, and fiber rolls) at the site for use when necessary.

D. Conduct Inspections and Maintain BMPs

As mentioned earlier (Chapter 6), EPA recommends that you develop an inspection schedule for your site that considers the size, complexity, and other conditions at your site. This should include regularly scheduled inspections and less formal inspections. EPA recommends that you develop a plan that includes inspections before and after anticipated rain events. You might also want to inspect some BMPs during rain events to see if they are actually keeping sediment on site! Conducting inspections during rain events also allows a construction site operator to address minor problems before they turn into major problems.

Temporarily Removed BMPs

BMPs sometimes need to be temporarily removed to conduct work in an area of the site. These temporarily removed BMPs should be noted on the site plan and replaced as soon as possible after the completion of the activity requiring their removal. If a rain is forecast, the BMPs should be replaced as soon as possible before the rain event.

Recommended Inspection Sequence

You should conduct thorough inspections of your site, making sure to inspect all areas and BMPs. The seven activities listed below are a recommended inspection sequence that will help you conduct a thorough inspection (adapted from MPCA 2004).

1. Plan your inspection

- ☑ Create a checklist to use during the inspection (see Appendix B)
- ☑ Obtain a copy of the site map with BMP locations marked
- ☑ Plan to walk the entire site, including discharge points from the site and any off-site support activities such as concrete batch plants should also be inspected
- ☑ Follow a consistent pattern each time to ensure you inspect all areas (for example, starting at the lowest point and working uphill)

2. Inspect discharge points and downstream, off-site areas

- ☑ Inspect discharge locations to determine whether erosion and sediment control measures are effective
- ☑ Inspect nearby downstream locations, if feasible
- ☑ Walk *down the street* to inspect off-site areas for signs of discharge. This is important in areas with existing curbs and gutters
- ☑ Inspect downslope municipal catch basin inlets to ensure that they are adequately protected

3. Inspect perimeter controls and slopes

- ☑ Inspect perimeter controls such as silt fences to determine if sediment should be removed
- ☑ Check the structural integrity of the BMP to determine if portions of the BMP need to be replaced
- ☑ Inspect slopes and temporary stockpiles to determine if erosion controls are effective

4. Compare BMPs in the site plan with the construction site conditions

- ☑ Determine whether BMPs are in place as required by the site plan
- ☑ Evaluate whether BMPs have been adequately installed and maintained
- ☑ Look for areas where BMPs are needed but are missing and are not in the SWPPP

5. Inspect construction site entrances

- ☑ Inspect the construction exits to determine if there is tracking of sediment from the site onto the street
- ☑ Refresh or replace the rock in designated entrances
- ☑ Look for evidence of additional construction exits being used that are not in the SWPPP or are not stabilized
- ☑ Sweep the street if there is evidence of sediment accumulation

6. Inspect sediment controls

- ☑ Inspect any sediment basins for sediment accumulation
- ☑ Remove sediment when it reduces the capacity of the basin by the specified amount (many permits have specific requirements for sediment basin maintenance. Check the appropriate permit for requirements and include those in your SWPPP)

7. Inspect pollution prevention and good housekeeping practices

- ☑ Inspect trash areas to ensure that waste is properly contained
- ☑ Inspect material storage and staging areas to verify that potential pollutant sources are not exposed to stormwater runoff
- ☑ Verify that concrete, paint, and stucco washouts are being used properly and are correctly sized for the volume of wash water
- ☑ Inspect vehicle/equipment fueling and maintenance areas for signs of stormwater pollutant exposure

Common Compliance Problems During Inspections

The following are problems commonly found at construction sites. As you conduct your inspections, look for these problems on your site (adapted from MPCA 2004).

Problem #1—Not using phased grading or providing temporary or permanent cover (i.e., soil stabilization)
In general, construction sites should phase their grading activities so that only a portion of the site is exposed at any one time. Also, disturbed areas that are not being actively worked should have temporary cover. Areas that are at final grade should receive permanent cover as soon as possible.

Problem #2—No sediment controls on-site
Sediment controls such as silt fences, sediment barriers, sediment traps and basins must be in place before soil-disturbance activities begin. Don't proceed with grading work out-of-phase.

Problem #3—No sediment control for temporary stockpiles
Temporary stockpiles must be seeded, covered, or surrounded by properly installed silt fence. Stockpiles should never be placed on paved surfaces.

Problem #4—No inlet protection
All storm drain inlets that could receive a discharge from the construction site must be protected before construction begins and must be maintained until the site is finally stabilized.

Problem #5—No BMPs to minimize vehicle tracking onto the road
Vehicle exits must use BMPs such as stone pads, concrete or steel wash racks, or equivalent systems to prevent vehicle tracking of sediment.

Problem #6—Improper solid waste or hazardous waste management
Solid waste (including trash and debris) must be disposed of properly, and hazardous materials (including oil, gasoline, and paint) must be properly stored (which includes secondary containment). Properly manage portable sanitary facilities.

Problem #7—Dewatering and other pollutant discharges at the construction site
Construction site dewatering from building footings or other sources should not be discharged without treatment. Turbid water should be filtered or allowed to settle.

Problem #8—Poorly managed washouts (concrete, paint, stucco)
Water from washouts must not enter the storm drain system or a nearby receiving water. Make sure washouts are clearly marked, sized adequately, and frequently maintained.

Problem #9—Inadequate BMP maintenance
BMPs must be frequently inspected and maintained if necessary. Maintenance should occur for BMPs that have reduced capacity to treat stormwater (construction general permits or state design manuals often contain information on when BMPs should be maintained), or BMPs that have been damaged and need to be repaired or replaced (such as storm drain inlet protection that has been damaged by trucks).

Problem #10—Inadequate documentation or training
Failing to develop a SWPPP, keep it up-to-date, or keep it on-site, are permit violations. You should also ensure that SWPPP documentation such as a copy of the NOI, inspection reports and updates to the SWPPP are also kept on-site. Likewise, personnel working on-site must be trained on the basics of stormwater pollution prevention and BMP installation/maintenance.

E. Update and Evaluate Your SWPPP

Like your construction site, your SWPPP is dynamic. It is a document that must be amended to reflect changes occurring at the site. As plans and specifications change, those changes should be reflected in your SWPPP. If you find that a BMP is not working and you decide to replace it with another, you must reflect that change in your SWPPP. Document in your SWPPP transitions from one phase of construction to the next, and make sure you implement new BMPs required for that next phase.

Are Your BMPs Working?

You should evaluate the effectiveness of your BMPs as part of your routine inspection process. An informal analysis of both your inspection's findings and your list of BMP repairs will often reveal an inadequately performing BMP. An inspection immediately after a rain event can indicate whether another approach is needed.

You may decide to remove an existing BMP and replace it with another, or you may add another BMP in that area to lessen the impact of stormwater on the original installation.

When you update your SWPPP, you can simply mark it up, particularly for relatively simple changes and alterations. More significant changes might require a rewriting of portions of the SWPPP. The site map should also be updated as necessary.

Chapter 9: **Final Stabilization and Permit Termination**

This chapter describes what you must do to stabilize your construction site and end permit coverage.

Stabilize Disturbed Areas

As your construction project progresses, you must stabilize areas not under construction. EPA and most states have specific requirements and time frames that must be followed. Generally, it is a wise management practice to stabilize areas as quickly as possible to avoid erosion problems that could overwhelm silt fences, sediment basins, and other sediment control devices.

SWPPP Tip!

Stabilize as soon as practicable

EPA's Construction General Permit states that, "stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased."

Temporary stabilization can be achieved through a variety of BMPs, including mulching, seeding, erosion control blankets, hydroseeding, and other measures.

Permanent or final stabilization of areas on your site is generally accomplished by installing the final landscape requirements (e.g., trees, grass, gardens, or permanent stormwater controls). Once the site has been stabilized, you can terminate your permit coverage.

Sediment controls, such as silt fence, berms, sediment ponds or traps, alone, are not stabilization measures. You should continue to use these kinds of measures (e.g., silt fence around an area that has been seeded) until full stabilization is achieved.

A. Final Stabilization

When you have completed your construction project or an area within the overall project, you must take steps to permanently and finally stabilize it. Check your permit for the specific requirements you must meet. After a project or an area in the project has been fully stabilized, you should remove temporary sediment and erosion control devices (such as silt fences). You might also be able to stop routine inspections in these stabilized areas. However, in some states such as Colorado, inspections are required every 30 days (after the construction has been completed and the site is stabilized) until permit coverage has been terminated. In general, you should be aware that

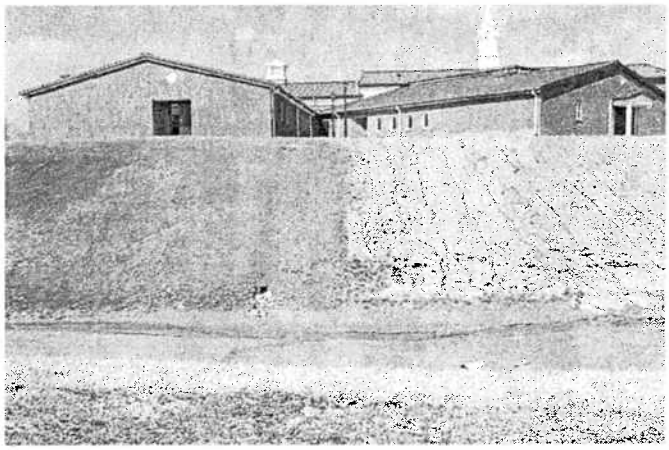


Figure 16. Seeding is an effective BMP that can be used to temporarily or permanently stabilize disturbed areas.

final stabilization often takes time (weeks or even months), especially during times of low rainfall or during the colder months of the year. You should not discontinue routine inspections until you have met the final stabilization requirements in your permit.

EPA and many states define final stabilization as occurring when a uniform, evenly distributed perennial vegetative cover with a density of 70 percent of the native background cover has been established on all unpaved areas and areas not covered by permanent structures. Some states have a higher percentage of vegetative cover required (e.g., New York requires 80 percent). Please review your state's construction general permit for specific requirements.

Native vegetation must be established uniformly over each disturbed area on the site. Stabilizing seven of ten slopes, or leaving an area equivalent to 30 percent of the disturbed area completely unstabilized will not satisfy the *uniform vegetative cover* standard.

The contractor must establish vegetation over the entire disturbed soil area at a minimum density of 70 percent of the native vegetative coverage. For example, if native vegetation covers 50 percent of the undisturbed ground surface (e.g., in an arid or semi-arid area), the contractor must establish 35 percent vegetative coverage uniformly over the entire disturbed soil area ($0.70 \times 0.50 = 0.35$ or 35 percent). Several states require perennial native vegetative cover that is *self-sustaining* and capable of providing *erosion control equivalent to preexisting conditions* to satisfy the 70 percent coverage requirement.

In lieu of vegetative cover, you can apply alternate measures that provide equivalent soil stabilization to the disturbed soil area. Such equivalent measures include blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles, or other erosion-resistant soil covering or treatments. Your construction general permit might allow all or some of these alternate measures for equivalent soil stabilization for final stabilization; check your general permit.

B. Permit Termination

Once construction activity has been completed and disturbed areas are finally stabilized, review your general permit for specific steps to end your coverage under that permit. EPA and many states require you to submit a form, often called a notice of termination (NOT), to end your coverage under that construction general permit. Before terminating permit coverage, make sure you have accomplished the following:

- Remove any construction debris and trash
- Remove temporary BMPs (such as silt fence). Remove any residual sediment as needed. Seed and mulch any small bare spots. BMPs that will decompose, including some fiber rolls and blankets, may be left in place
- Check areas where erosion-control blankets or matting were installed. Cut away and remove all loose, exposed material, especially in areas where walking or mowing will occur. Reseed all bare soil areas
- Ensure that 70 percent of background native vegetation coverage or equivalent stabilization measures have been applied for final soil stabilization of disturbed areas
- Repair any remaining signs of erosion
- Ensure that post-construction BMPs are in place and operational. Provide written maintenance requirements for all post-construction BMPs to the appropriate party
- Check all drainage conveyances and outlets to ensure they were installed correctly and are operational. Inspect inlet areas to ensure complete stabilization and remove any brush or debris that could clog inlets. Ensure banks and ditch bottoms are well vegetated. Reseed bare areas and replace rock that has become dislodged
- Seed and mulch or otherwise stabilize any areas where runoff flows might converge or high velocity flows are expected
- Remove temporary stream crossings. Grade, seed, or re-plant vegetation damaged or removed
- Ensure subcontractors have repaired their work areas before final closeout

You might also be required to file an NOT if you transfer operational control to another

Take a Closer Look...

Is there a deadline to submit an NOT?

Many states require a Notice of Termination (NOT) or similar form to indicate that the construction phase of a project is completed and that all the terms and conditions have been met. This notification informs the permitting authority that coverage under the construction general permit is no longer needed. If your permitting authority requires such a notification, check to see what conditions must be met in order to submit it and check to see if there is a deadline for submission. EPA's Construction General Permit requires that you submit an NOT when you have met all your permit requirements. The NOT is due no later than 30 days after meeting these requirements.

What does this mean to me?

Check your permit carefully for details and conditions relating to terminating your permit coverage.

party before the project is complete. The new operator would be required to develop and implement a SWPPP and to obtain permit coverage as described above.

EPA and most states allow homebuilders to terminate permit coverage when the property has been transferred to the homeowner with temporary or final stabilization measures in place. If the transfer is made with temporary stabilization measures in place, EPA expects the homeowner to complete the final landscaping. Under these circumstances, EPA and most states do not require homeowners to develop SWPPPs and apply for permit coverage.

C. Record Retention

EPA's regulations specifies that you must retain records and reports required in the permit, including SWPPPs and information used to complete the NOI, for at least 3 years from the termination of coverage or expiration of the permit. You should also keep maintenance and inspection records related to the SWPPP for this same time frame. General permits issued by states may have a longer period for retention.

Figure 17. Make sure inlets, outlets, and slopes are well stabilized before leaving the site and filing your "Notice of Termination" for ending permit coverage.

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Acknowledgements

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Appendix A: **SWPPP Template**

An electronic copy of the SWPPP template is available on EPA's web site at:
http://www.epa.gov/npdes/swpppguide

Appendix B: **Sample Inspection Report**

An electronic copy of the sample inspection report is available on EPA's web site at:
http://www.epa.gov/npdes/swpppguide

Appendix C: **Calculating the Runoff Coefficient**

The following information is largely taken from EPA's 1992 guidance *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-005).

It is important to estimate your development's impact on runoff after construction is complete. This can be done by estimating the runoff coefficient for pre- and post-construction conditions. The runoff coefficient ("C" value) is the partial amount of the total rainfall which will be come runoff. The runoff coefficient is used in the "rational method" which is:

$$Q = CiA,$$

Where Q = the rate of runoff from an area,
i = rainfall intensity, and
A = the area of the drainage basin.

There are many methods which can be used to estimate the amount of runoff from a construction site. You are not required to use the rationale method to design stormwater conveyances or BMPs. Consult your State/local design guides to determine what methods to use for estimating design flow rates from your development.

The less rainfall that is absorbed (infiltrates) into the ground, evaporates, or is otherwise absorbed on site, the higher the "C" value. For example, the "C" value of a lawn area is 0.2, which means that only 20 percent of the rainfall landing on that area will run off, the rest will be absorbed or evaporate. A paved parking area would have a "C" value of 0.9, which means that 90 percent of the rainfall landing on that area will become runoff. You should calculate the runoff coefficient for conditions before construction and after construction is complete. It is suggested that a runoff coefficient be calculated for each drainage basin on the site. The following is an example of how to calculate the "C" value.

The runoff coefficient or "C" value for a variety of land uses may be found in Table C-1 (NOTE: Consult your State/local design guide, if available, to determine if specific "C" values are specified for your area). The "C" values provide an estimate of anticipated runoff for particular land uses. Most sites have more than one type of land use and therefore more than one "C" value will apply. To have a "C" value that represents your site you will need to calculate a "weighted C value."

Calculating a "Weighted C value"

When a drainage area contains more than one type of surface material with more than one runoff coefficient a "weighted C" must be calculated. This "weighted C" will take into account the amount of runoff from all the various parts of the site. A formula used to determine the "weighted C" is as follows:

$$C = \frac{A_1C_1 + A_2C_2 + \ldots + A_xC_x}{(A_1 + A_2 + \ldots + A_x)}$$

Where A = acres and C = coefficient.

Therefore, if a drainage area has 15 acres (ac.) with 5 paved acres (C = 0.9), 5 grassed acres (C = 0.2), and 5 acres in natural vegetation (C = 0.1), a "weighted C" would be calculated as follows:

$$C = \frac{(5 \text{ ac} \times 0.9) + (5 \text{ ac} \times 0.2) + (5 \text{ ac} \times 0.1)}{(5 \text{ ac} + 5 \text{ ac} + 5 \text{ ac})} = 0.4$$

Table C-1. Typical "C" Values

Description of Area	Runoff Coefficients
Business	
Downtown Areas	0.70 – 0.95
Neighborhood Areas	0.50 – 0.70
Residential	
Single-family areas	0.30 – 0.50
Multi-units, detached	0.40 – 0.60
Multi-units, attached	0.60 – 0.75
Residential (suburban)	0.25 – 0.40
Apartment dwelling areas	0.50 – 0.70
Industrial	
Light Areas	0.50 – 0.80
Heavy Areas	0.60 – 0.90
Parks, cemeteries	0.10 – 0.25
Playgrounds	0.20 – 0.35
Railroad yard areas	0.20 – 0.40
Unimproved areas	0.10 – 0.30
Streets	
Asphalt	0.70 – 0.95
Concrete	0.80 – 0.95
Brick	0.70 – 0.85
Drives and Walks	0.75 – 0.85
Roofs	0.75 – 0.95
Lawns – course textured soil (greater than 85% sand)	
Slope: Flat, 2%	0.05 – 0.10
Average, 2-7%	0.10 – 0.15
Steep, 7%	0.15 – 0.20
Lawns – fine textured soil (greater than 40% clay)	
Slope: Flat, 2%	0.13 – 0.17
Average, 2-7%	0.18 – 0.22
Steep, 7%	0.25 – 0.35

Appendix D: **Resources List**

The following are just a few of the many resources available to assist you in developing your SWPPP. The inclusion of these resources does not constitute an endorsement by EPA.

EPA Resources

EPA Stormwater Construction Website
http://www.epa.gov/npdes/stormwater/construction

- EPA's Construction General Permit (**http://www.epa.gov/npdes/stormwater/cgp**)
  EPA's general permit that applies to all construction activity disturbing greater than one acre in the states and territories where EPA is the permitting authority.
- Construction SWPPP Guide, SWPPP Template and inspection form (**www.epa.gov/npdes/swpppguide**)
  A downloadable copy of this guide, the SWPPP template and inspection form.
- Menu of BMPs (**http://www.epa.gov/npdes/stormwater/menuofbmps**)
  Site containing over 40 construction BMP fact sheets. Also contains fact sheets on other stormwater program areas, and case studies organized by program area.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
http://www.epa.gov/owow/nps/urbanmm/index.html

Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development
http://www.epa.gov/compliance/resources/publications/assistance/sectors/constructmyer/index.html

Expedited Settlement Offer Program for Stormwater (Construction)
http://www.epa.gov/Compliance/resources/policies/civil/cwa/esoprogstormwater.pdf
A supplemental program to ensure consistent EPA enforcement of stormwater requirements at construction sites for relatively minor violations.

Construction Industry Compliance Assistance
http://www.cicacenter.org
Plain language explanations of environmental rules for the construction industry. Links to stormwater permits and technical manuals for all 50 states.

Smart Growth and Low Impact Development Resources

Using Smart Growth Techniques as Stormwater Best Management Practices
http://www.epa.gov/livablecommunities/pdf/sg_stormwater_BMP.pdf

Stormwater Guidelines for Green, Dense Development
http://www.epa.gov/smartgrowth/pdf/Stormwater_Guidelines.pdf

Protecting Water Resources with Smart Growth
http://www.epa.gov/smartgrowth/pdf/waterresources_with_sg.pdf

Parking Spaces / Community Places: Finding the Balance Through Smart Growth Solutions
http://www.epa.gov/smartgrowth/parking.htm

EPA Nonpoint Source Low Impact Development site
http://www.epa.gov/owow/nps/lid/

Better Site Design: A Handbook for Changing Development Rules in Your Community
Available from **http://www.cwp.org**

State BMP/Guidance Manuals

Kentucky Erosion Prevention and Sediment Control Field Guide
http://www.water.ky.gov/permitting/wastewaterpermitting/KPDES/storm/
Easy to read field guide describing erosion and sediment control BMP selection, installation and maintenance.

Minnesota Stormwater Construction Inspection Guide
http://www.pca.state.mn.us/publications/wq-strm2-10.pdf
A manual designed to assist municipal construction inspectors in the procedures for conducting a compliance inspection at construction sites.

California Stormwater Quality Association's Construction Handbook
http://www.cabmphandbooks.org/Construction.asp

Delaware Erosion and Sediment Control Handbook
http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/Stormwater/StormWater.htm

Western Washington Stormwater Management Manual – Volume II – Construction Stormwater Pollution Prevention
http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Eastern Washington Stormwater Management Manual
http://www.ecy.wa.gov/biblio/0410076.html
A guidance document addressing stormwater design and management in more arid climates.

Certification Programs

Certified Professional in Erosion and Sediment Control
http://www.cpesc.org

Virginia Erosion and Sediment Control Certification Program
http://www.dcr.virginia.gov/sw/estr&crt2.htm

Florida Stormwater, Erosion and Sedimentation Control Inspector Certification
http://www.dep.state.fl.us/water/nonpoint/erosion.htm

Other Resources

International Erosion Control Association
http://www.ieca.org
A non-profit organization helping members solve the problems caused by erosion and its byproduct—sediment.

Erosion Control Magazine
http://www.erosioncontrol.com
A journal for erosion and sediment control professionals.

Designing for Effective Sediment & Erosion Control on Construction Sites by Jerald S. Fifield, PH.D., CPESC. Available from Forester Press
http://www.foresterpress.com
Book describing proven and practical methods for minimizing erosion and sedimentation on construction sites.

Stormwater Permitting: A Guide for Builders and Developers by National Association of Home Builders (NAHB). Available from NAHB **http://www.nahb.org**

Beazer Homes

Pre-Construction Inspection and Review Form

Appendix C

Pre-Construction Inspection and Review Form (PCIR)

Site Name: _____ Permittee: _____

City: _____ County: _____ State: _____

Site Stormwater Compliance Representative: _____

Division: _____ Division Stormwater Rep: _____

Permit Coverage	Yes	No	N/A	Permit No./Identifier	Date of Coverage
1. Federal / State (select one) permit application filed and accurate?					
2. County					
3. City					
4. Special District (Other)					
5. If there are multiple stormwater plans, including erosion and sedimentation control plans, for this Site, check the plans for consistency.					
Stormwater Plan ("SWP") Information	**Yes**	**No**	**N/A**	**Deficiency Identified**	**Date Fixed**
6. If required by the Applicable Permit, is the SWP properly certified?					
7. Has the Site Stormwater Compliance Representative reviewed the SWPPP?					
8. Does the SWP identify the stages of construction and the stormwater controls called for at each stage?					
9. Does the SWP identify the site inspection frequency and routine maintenance deadlines required by the Applicable Permit?					
10. Does the SWP contain a statement by the preparer that its development was guided by the requirements of Paragraph 10(c) of the Consent Decree and the EPA guide for developing SWPPPs attached as Appendix B to the Decree?					
Site Status	**Yes**	**No**	**N/A**	**Deficiency Identified**	**Date Fixed**
11. Has the Site Stormwater Compliance Representative(s) received Stormwater Training?					
12. Are stormwater controls called for in current phases of construction properly located and installed?					
13. As applicable, do the installed stormwater controls appear to be working properly and are they appropriate for existing conditions at the Site?					

A Stormwater Compliance Representative must review and sign this Pre-Construction Inspection and Review Form. Do not sign this form until a responsive action has been completed for each deficiency identified on this form and the completion date of the responsive action noted. Do not commence construction activity until this form has been signed. For purposes of this form, construction activity does not include geotechnical investigations, surveying, environmental testing, plant (vegetation) salvage, or the initial installation of BMPs that are not sediment basins, provided that none of these activities involve significant soil disturbance.

Name Signature Date

Title:

Please note that this form must be kept with the SWP.

Beazer Homes

Site Inspection Form

Appendix D

Site Inspection Report

Site Name: _____ Permittee: _____

Division: _____ Inspection Date: _____ Inspector: _____

Weather conditions (check one): Dry Rain Snow Icy

Inspection Type (check one): Regular Precipitation Quarterly Final

General	Yes	No	N/A	Responsive Action Log Reference #
A. Is the Stormwater Plan ("SWP") on Site or its location posted?				
B. If required under the Applicable Permit, is the Applicable Permit and/or NOI on Site?				
C. Is contact information provided on Site and is it correct?				
D. Since the last site inspection, has Beazer received written notice of a federal, state, or local inspection evaluating compliance with the Applicable Permit?				
E. Was the Site Inspection Report for the last inspection signed by the Site Stormwater Compliance Representative and certified if and as required by the Applicable Permit?				
F. Have Action Items from last Site Inspection been addressed? If not describe why not on Responsive Action Log for this Site Inspection.				
Maintenance	**Yes**	**No**	**N/A**	**Responsive Action Log Reference #**
G. Is there an excess of sediment or an excess of other pollutants exiting the Site?				
H. Are off-Site roads/gutters free of excessive sediment from the Site?				
I. If required, are construction exit/entrance controls properly located in accordance with the SWP and the Applicable Permit and in working condition, with no repairs necessary?				
J. Are exposed areas stabilized in accordance with the SWP and the Applicable Permit ?				
K. Are stockpiles located and stabilized in accordance with the SWP and the Applicable Permit?				
L. Are other BMPs properly located in accordance with the SWP and the Applicable Permit, in working condition, and no repairs necessary?				
M. Are washouts properly located in accordance with the SWP and the Applicable Permit, in working condition, and no repairs necessary?				
N. Are hazardous materials managed in accordance with the SWP and the Applicable Permit?				
O. Are trash, construction debris, and other solid wastes managed in accordance with the SWP and the Applicable Permit?				
P. If portable toilets are provided are they properly located?				
Q. Are the Site Stormwater BMPs and the SWP consistent with each other?				

Please note that this form must be kept with the Stormwater Plan ("SWP").

Name and Title of Inspector	Signature of Inspector	Date

[INSERT CERTIFICATION IF AND AS REQUIRED BY THE APPLICABLE PERMIT]

Name and Title of Certifying Party	Signature	Date

If a Stormwater Consultant or Designee conducts an inspection, the Site Stormwater Compliance Representative must review and sign the completed Site Inspection Report.

Name: Site Stormwater Compliance Representative	Signature	Date

***Items that appear on the Responsive Action Log are outstanding as of the date and time of printing. Responsive Actions corrected prior to the next inspection will not be carried forward. ***

Responsive Action Log

Site name: _____ **Inspection date:** _____

Permittee: _____ **Division:** _____

Responsive Action Log Reference #	Lot/Area	Responsive Action and Date Identified	Date Responsive Action Completed	Initials

Please note that this form must be kept with the Stormwater Plan ("SWP").

User Instructions for Site Inspection Report (Appendix D)

GENERAL INSTRUCTIONS

- This form consists of the Site Inspection Report and Responsive Action Log. These are legal documents.

- Only the Site Stormwater Compliance Representative or his/her Designee, including a Stormwater Consultant, is permitted to undertake the inspection required by this form. If you are not this person, you must contact the Division Stormwater Compliance Representative immediately.

- Each Action Item must have a corresponding Responsive Action. An Action Item is a condition that requires action to be taken to achieve or maintain compliance with the Stormwater Requirements. A Responsive Action is an action taken to address an Action Item or to achieve or maintain compliance with Stormwater Requirements.

- Before proceeding with any inspection, you must first verify that the immediately previous inspection was conducted and the Site Inspection Form completed. You must also determine whether all Responsive Actions identified from the prior inspection, if any, were undertaken within the time period allowed by the Applicable Permit.

- You must restate or carry over to the current Responsive Action Log any Responsive Action not completed since the last inspection regardless of the time period allowed by the Applicable Permit. The system should do this for you. For each Responsive Action carried forward, you should make a note in the current Responsive Action Log that the Responsive Action has been carried forward.

- You must answer every question. Check "Yes," "No," or "N/A" for each question as appropriate. A response of "N/A" is only permitted where the designated area under "N/A" is not shaded.

- If you identify a deficiency for any question ("yes" identifies a deficiency for Questions D and G), you must provide a reference number under the "Responsive Action Log Reference #" column for each Action Item identified. A unique reference number should be generated for you when you enter your inspection into the electronic database and input the responsive action information into the system.

- The Inspector must sign and date the completed Site Inspection Form. The designated certifying party must certify the inspection as well. If you are a Stormwater Consultant or a Designee for the Site Stormwater Compliance Representative and you complete this form, the Site Stormwater Compliance Representative must review and sign the completed form as the certifying party.

- A copy of each completed Site Inspection Report and Responsive Action Log must be kept with the SWP.

- At the conclusion of the Site Inspection, a copy of the Site Inspection Report and Responsive Action Log should be forwarded to the Division Stormwater Compliance Representative.

- You must record the following information on each Site Inspection Report:

  - ✓ Site Name. Insert the name that is recorded on the Notice of Intent.

  - ✓ Permittee. Enter the name that appears on the Applicable Permit or the Notice of Intent.

  - ✓ Division. Insert the name of the Beazer operating division responsible for the Site identified on the form.

  - ✓ Inspection Date. Insert the date on which the inspection is being performed.

  - ✓ Inspector. Enter the name of the person performing the inspection.

  - ✓ Weather conditions. Mark the appropriate description that best describes current weather conditions.

  - ✓ Type of Inspection. Mark the inspection type that represents the purpose of the inspection. Only one inspection type may be marked. A Regular inspection is one conducted according to the regular schedule of inspections for a Site. A Precipitation inspection is one conducted, when required by the Applicable Permit, after a precipitation event as specified in the Applicable Permit. A Quarterly Inspection is one conducted in conjunction with the quarterly oversight for the Site. A Final Inspection is the last inspection planned prior to filing a Notice of Termination.

INSTRUCTIONS FOR COMPLETING INDIVIDUAL QUESTIONS

- You must respond to all of the following questions on each and every Site Inspection Report:

  A. **Is the Stormwater Plan ("SWP") on Site or its location posted?** - You must verify that the SWP is either at the construction office if the Site has one, or that the location of the SWP is posted with contact information for the Site Stormwater Compliance Representative.

  B. **If required under the Applicable Permit, is the Applicable Permit and/or NOI on Site?** - You must verify that the Applicable Permit and notification letter (if applicable) are on Site if required under the Applicable Permit. Maintain a complete copy of the Applicable Permit in the SWP Binder.

  C. **Is contact information provided on Site and is it correct?** - You must verify that the name and phone number of the Site Stormwater Compliance Representative are located in a conspicuous place on Site and are correct and legible.

  D. **Since the last site inspection, has Beazer received written notice of a federal, state, or local inspection evaluating compliance with the Applicable Permit - (i.e., the NPDES or State equivalent stormwater permit)?** The notice contemplated by this question is written notice from a federal, state, or local entity regarding a stormwater inspection evaluating compliance with the

Applicable Permit (i.e., the NPDES or State equivalent stormwater permit). Local inspections evaluating compliance with local programs (e.g. post-construction stormwater management or locally approved erosion and sediment control) do not require an answer of yes to this question. If, however, Beazer has received written notice of a federal, state, or local inspection evaluating compliance with the Applicable Permit, you must record the name of the agency that performed the inspection, the name and position of the person that performed the inspection for the agency, and the date of the inspection. Further, you must include on the Responsive Action Log a description of alleged violations based on the federal, state, or local inspection, whether or not Beazer intends to challenge the alleged violations.

E. **Was the Site Inspection Report for the last inspection signed by the Site Stormwater Compliance Representative and certified if and as required by the Applicable Permit?** - You must verify that the Site Inspection Report for the prior inspection was signed and, if required under the Applicable Permit, certified, whether that person was a Designee or the Site Stormwater Compliance Representative. You must also verify the Site Stormwater Compliance Representative reviewed and signed the form if a Designee conducted the Site Inspection.

F. **Have Action Items from last Site Inspection been addressed? If not, describe why not on Responsive Action Log for this Site Inspection.** You must verify whether or not all Responsive Actions recorded on the prior Responsive Action Log have been completed. If not, explain on the Responsive Action Log for the current Site Inspection the reasons why these actions have not been accomplished, what actions remain to be taken and whether our response to date satisfies applicable permit requirements. **Do not leave any blanks in a prior Responsive Action Log. This information can be inserted in the notes section of the Responsive Actions that are carried forward.**

- **Maintenance** - Assign a separate reference number to each Action Item identified within the following categories and briefly describe the Responsive Action required to address the Action Item.

G. **Is there an excess of sediment or an excess of other pollutants exiting the Site?** - You must verify that neither an excess of sediment nor an excess of other pollutants is exiting the Site. You should check applicable BMPs such as outfalls, exit/entrance controls, site perimeter controls, receiving water courses and adjacent offsite areas for excessive sediment or other excessive pollutant discharges. You should determine and record the source of the excessive sediment or other pollutants. If an off-site property is discharging sediment or other pollutants onto the Site, record that information and whether the off-site source is contributing to the excessive discharge from the Site.

H. **Are off-Site roads/gutters free of excessive sediment from the Site?** - You must verify that the roads adjacent to the Site are free of excessive sediment. You should determine and record the source of the excessive sediment. If an off-site property is contributing to or causing the excessive sediment in the off-Site roads or gutters, record that information.

I. If required **are construction exit/entrance controls properly located in accordance with the SWP and the Applicable Permit and in working condition, with no repairs necessary?** - You must verify that exit/entrance controls are properly located, in working condition, and no repairs necessary. You should check that exit/entrance controls, such as stone pads, rumble grates, and the like, for the construction entrances and other access points are in place and are maintained pursuant to the SWP.

J. **Are exposed areas stabilized in accordance with the SWP and the Applicable Permit?** - You must verify that exposed areas are stabilized as required. Exposed areas are any areas that have been disturbed or have otherwise lost natural cover. You should check that areas where construction activity has ceased or has been temporarily suspended are stabilized in accordance with the SWP.

K. **Are stockpiles located and stabilized in accordance with the SWP and the Applicable Permit?** - You must verify that stockpiles are located and stabilized as required. You should check that stockpiles are located in areas where they may minimize the potential for discharging excessive sediment from the Site or onto any road or gutter and that they have been stabilized in accordance with the SWP.

L. **Are other BMPs properly located in accordance with the SWP and the Applicable Permit, in working condition, and no repairs necessary?** - You must verify that BMPs are properly located and in working condition and that no repairs are necessary. You should check that BMPs (including by way of illustration, linear barriers, soil stabilization techniques, sediment ponds/traps and inlet protection) are properly placed, appear to be working, and are maintained in accordance with the SWP.

M. **Are washouts properly located in accordance with the SWP and the Applicable Permit, in working condition, and no repairs necessary?** - You must verify that concrete, paint, and other washouts are properly placed, appear to be working, and are maintained in accordance with the SWP.

N. **Are hazardous materials managed in accordance with the SWP and the Applicable Permit?** - You must verify that hazardous materials are managed as required. You should check that storage and containment areas and controls and that management of hazardous materials (including leaks and spills) are implemented in accordance with the SWP.

O. **Are trash, construction debris, and other solid wastes managed in accordance with the SWP and the Applicable Permit?** - You must verify that trash, construction debris, and other solid wastes are managed as required. You should check that controls for the collection and storage of trash, construction debris and other solid wastes are properly placed, appear to be effective, and are maintained in accordance with the SWP.

P. **If portable toilets are provided are they properly located?** - You must verify that if portable toilets are provided they are properly located. You should check that portable toilets are located off roads and away from gutters and inlets and are properly anchored and maintained.

Q. **Are the Site Stormwater BMPs and the SWP consistent with each other?** - You must verify that Site BMPs and the SWP are consistent with each other. You should check that the BMPs shown on the SWP for the current stage of construction exist on Site and that the BMPs that exist on Site are shown on the SWP. In particular, you must make sure that any map or figure within the SWP is consistent with what has been installed on the ground. Even if we have installed additional BMPs not originally called for in the SWP, the additional BMPs must be shown on the map.

INSTRUCTIONS FOR COMPLETING THE RESPONSIVE ACTION LOG

- The system will generate and record each reference number from the Site Inspection Report under "Responsive Action Log Reference #" on the Responsive Action Log in the first column under "Responsive Action Log Reference #."

- For each recorded reference number, you must identify in the "Responsive Action" column the Responsive Action taken or to be taken.

- If a condition relates to a BMP, you must identify the applicable BMP by type and location (e.g., lot/block) and state the action necessary to achieve or maintain compliance with the SWP. If a condition relates to anything other than a BMP, you must briefly describe the condition that requires action and the action necessary to achieve or maintain compliance with the SWP.

- The date the Action Item was first identified must be recorded in the Responsive Action column. The date stamp will be recorded along with input into this column.

- The date recorded for a Responsive Action under the "Responsive Action" column will not change, even if the Responsive Action is carried over to subsequent Responsive Action Logs. When a Responsive Action is restated or carried over to a new Responsive Action Log, you must restate or carry over the date for the Responsive Action as identified on the first Responsive Action Log on which the Responsive Action appeared.

- The Site Stormwater Compliance Representative or the Stormwater Consultant Designee is responsible for recording and initialing the date each Responsive Action is completed. If the Site Stormwater Compliance Representative or the Stormwater Consultant Designee actually performed the Responsive Action, he or she should date and initial the Responsive Action Log the same day as the Responsive Action is completed. If a Contractor performs the Responsive Action, the Site Stormwater Compliance Representative or the Stormwater Consultant Designee must confirm that the Responsive Action has been completed and record the date the Responsive Action was completed by the Contractor.

Beazer Homes

Quarterly Compliance Inspection and Review Form

Appendix E

Quarterly Compliance Inspection

Site Name: _____ Permittee: _____

Division: _____ Inspection Date: _____ Inspector: _____

Weather conditions (check one): Dry Rain Snow Icy

Inspection Type (check one): Regular Precipitation Quarterly Final

General	Yes	No	N/A	Responsive Action Log Reference #
A. Is the Stormwater Plan ("SWP") on Site or its location posted?				
B. If required under the Applicable Permit, is the Applicable Permit and/or NOI on Site?				
C. Is contact information provided on Site and is it correct?				
D. Since the last site inspection, has Beazer received written notice of a federal or state inspection evaluating compliance with the Applicable Permit?				
E. Was the Site Inspection Report for the last inspection signed by the Site Stormwater Compliance Representative and certified if and as required by the Applicable Permit?				
F. Have Action Items from last Site Inspection been addressed? If not describe why not on Responsive Action Log for this Site Inspection.				
Maintenance	**Yes**	**No**	**N/A**	**Responsive Action Log Reference #**
G. Is there an excess of sediment or an excess of other pollutants exiting the Site?				
H. Are off-Site roads/gutters free of excessive sediment from the Site?				
I. If required, are construction exit/entrance controls properly located in accordance with the SWP and in working condition, with no repairs necessary?				
J. Are exposed areas stabilized in accordance with the SWP?				
K. Are stockpiles located in accordance with the SWP and stabilized in accordance with the SWP?				
L. Are other BMPs properly located in accordance with the SWP in working condition, and no repairs necessary?				
M. Are washouts properly located in accordance with the SWP, in working condition, and no repairs necessary?				
N. Are hazardous materials managed in accordance with the SWP?				
O. Are trash, construction debris, and other solid wastes managed in accordance with the SWP?				
P. If portable toilets are provided are they properly located?				
Q. Are the Site Stormwater BMPs and the SWP consistent with each other?				

Please note that this form must be kept with the Stormwater Plan ("SWP").

Name and Title of Inspector	Signature of Inspector	Date

[INSERT CERTIFICATION IF AND AS REQUIRED BY THE APPLICABLE PERMIT]

Name and Title of Certifying Party	Signature	Date

***Items that appear on the Responsive Action Log are outstanding as of the date and time of printing. Responsive Actions corrected prior to the next inspection will not be carried forward. ***

Responsive Action Log

Site name: _____ **Inspection date:** _____

Permittee: _____ **Division:** _____

Responsive Action Log Reference #	Lot/Area	Responsive Action	Date Responsive Action Completed	Initials

Please note that this form must be kept with the Stormwater Plan ("SWP").

User Instructions for Quarterly Compliance Inspection Report (Appendix E)

GENERAL INSTRUCTIONS

- This form consists of the Site Inspection Report and Responsive Action Log. These are legal documents.

- Only the Site Stormwater Compliance Representative or his/her Designee, including a Stormwater Consultant, is permitted to undertake the inspection required by this form. If you are not this person, you must contact the Division Stormwater Compliance Representative immediately.

- Each Action Item must have a corresponding Responsive Action. An Action Item is a condition that requires action to be taken to achieve or maintain compliance with the Stormwater Requirements. A Responsive Action is an action taken to address an Action Item or to achieve or maintain compliance with Stormwater Requirements.

- Before proceeding with any inspection, you must first verify that the immediately previous inspection was conducted and the Site Inspection Form completed. You must also determine whether all Responsive Actions identified from the prior inspection, if any, were undertaken within the time period allowed by the Applicable Permit.

- You must restate or carry over to the current Responsive Action Log any Responsive Action not completed since the last inspection regardless of the time period allowed by the Applicable Permit. The system should do this for you. For each Responsive Action carried forward, you should make a note in the current Responsive Action Log that the Responsive Action has been carried forward.

- You must answer every question. Check "Yes," "No," or "N/A" for each question as appropriate. A response of "N/A" is only permitted where the designated area under "N/A" is not shaded.

- If you identify a deficiency for any question ("yes" identifies a deficiency for Questions D and G), you must provide a reference number under the "Responsive Action Log Reference #" column for each Action Item identified. A unique reference number should be generated for you when you enter your inspection into the electronic database and input the responsive action information into the system.

- The Inspector must sign and date the completed Site Inspection Form. The designated certifying party must certify the inspection as well. If you are a Stormwater Consultant or a Designee for the Site Stormwater Compliance Representative and you complete this form, the Site Stormwater Compliance Representative must review and sign the completed form as the certifying party.

- A copy of each completed Site Inspection Report and Responsive Action Log must be kept with the SWP.

- At the conclusion of the Site Inspection, a copy of the Site Inspection Report and Responsive Action Log should be forwarded to the Division Stormwater Compliance Representative.

- You must record the following information on each Site Inspection Report:

  - ✓ Site Name. Insert the name that is recorded on the Notice of Intent.

  - ✓ Permittee. Enter the name that appears on the Applicable Permit or the Notice of Intent.

  - ✓ Division. Insert the name of the Beazer operating division responsible for the Site identified on the form.

  - ✓ Inspection Date. Insert the date on which the inspection is being performed.

  - ✓ Inspector. Enter the name of the person performing the inspection.

  - ✓ Weather conditions. Mark the appropriate description that best describes current weather conditions.

  - ✓ Type of Inspection. Mark the inspection type that represents the purpose of the inspection. Only one inspection type may be marked. A Regular inspection is one conducted according to the regular schedule of inspections for a Site. A Precipitation inspection is one conducted, when required by the Applicable Permit, after a precipitation event as specified in the Applicable Permit. A Quarterly Inspection is one conducted in conjunction with the quarterly oversight for the Site. A Final Inspection is the last inspection planned prior to filing a Notice of Termination.

INSTRUCTIONS FOR COMPLETING INDIVIDUAL QUESTIONS

- You must respond to all of the following questions on each and every Site Inspection Report:

  A. **Is the Stormwater Plan ("SWP") on Site or its location posted?** - You must verify that the SWP is either at the construction office if the Site has one, or that the location of the SWP is posted with contact information for the Site Stormwater Compliance Representative.

  B. **If required under the Applicable Permit, is the Applicable Permit and/or NOI on Site?** - You must verify that the Applicable Permit and notification letter (if applicable) are on Site if required under the Applicable Permit. Maintain a complete copy of the Applicable Permit in the SWP Binder.

  C. **Is contact information provided on Site and is it correct?** - You must verify that the name and phone number of the Site Stormwater Compliance Representative are located in a conspicuous place on Site and are correct and legible.

  D. **Since the last site inspection, has Beazer received written notice of a federal, state, or local inspection evaluating compliance with the Applicable Permit - (i.e., the NPDES or State equivalent stormwater permit)?** The notice

contemplated by this question is written notice from a federal, state, or local entity regarding a stormwater inspection evaluating compliance with the Applicable Permit (i.e., the NPDES or State equivalent stormwater permit). Local inspections evaluating compliance with local programs (e.g. post-construction stormwater management or locally approved erosion and sediment control) do not require an answer of yes to this question. If, however, Beazer has received written notice of a federal, state, or local inspection evaluating compliance with the Applicable Permit, you must record the name of the agency that performed the inspection, the name and position of the person that performed the inspection for the agency, and the date of the inspection. Further, you must include on the Responsive Action Log a description of alleged violations based on the federal, state, or local inspection, whether or not Beazer intends to challenge the alleged violations.

E. **Was the Site Inspection Report for the last inspection signed by the Site Stormwater Compliance Representative and certified if and as required by the Applicable Permit?** - You must verify that the Site Inspection Report for the prior inspection was signed and, if required under the Applicable Permit, certified, whether that person was a Designee or the Site Stormwater Compliance Representative. You must also verify the Site Stormwater Compliance Representative reviewed and signed the form if a Designee conducted the Site Inspection.

F. **Have Action Items from last Site Inspection been addressed? If not, describe why not on Responsive Action Log for this Site Inspection.** You must verify whether or not all Responsive Actions recorded on the prior Responsive Action Log have been completed. If not, explain on the Responsive Action Log for the current Site Inspection the reasons why these actions have not been accomplished, what actions remain to be taken and whether our response to date satisfies applicable permit requirements. **Do not leave any blanks in a prior Responsive Action Log. This information can be inserted in the notes section of the Responsive Actions that are carried forward.**

- **Maintenance** - Assign a separate reference number to each Action Item identified within the following categories and briefly describe the Responsive Action required to address the Action Item.

G. **Is there an excess of sediment or an excess of other pollutants exiting the Site?** - You must verify that neither an excess of sediment nor an excess of other pollutants is exiting the Site. You should check applicable BMPs such as outfalls, exit/entrance controls, site perimeter controls, receiving water courses and adjacent offsite areas for excessive sediment or other excessive pollutant discharges. You should determine and record the source of the excessive sediment or other pollutants. If an off-site property is discharging sediment or other pollutants onto the Site, record that information and whether the off-site source is contributing to the excessive discharge from the Site.

H. **Are off-Site roads/gutters free of excessive sediment from the Site?** - You must verify that the roads adjacent to the Site are free of excessive sediment. You should determine and record the source of the excessive sediment. If an

off-site property is contributing to or causing the excessive sediment in the off-Site roads or gutters, record that information.

I. If required **are construction exit/entrance controls properly located in accordance with the SWP and the Applicable Permit and in working condition, with no repairs necessary?** - You must verify that exit/entrance controls are properly located, in working condition, and no repairs necessary. You should check that exit/entrance controls, such as stone pads, rumble grates, and the like, for the construction entrances and other access points are in place and are maintained pursuant to the SWP.

J. **Are exposed areas stabilized in accordance with the SWP and the Applicable Permit?** - You must verify that exposed areas are stabilized as required. Exposed areas are any areas that have been disturbed or have otherwise lost natural cover. You should check that areas where construction activity has ceased or has been temporarily suspended are stabilized in accordance with the SWP.

K. **Are stockpiles located and stabilized in accordance with the SWP and the Applicable Permit?** - You must verify that stockpiles are located and stabilized as required. You should check that stockpiles are located in areas where they may minimize the potential for discharging excessive sediment from the Site or onto any road or gutter and that they have been stabilized in accordance with the SWP.

L. **Are other BMPs properly located in accordance with the SWP and the Applicable Permit, in working condition, and no repairs necessary?** - You must verify that BMPs are properly located and in working condition and that no repairs are necessary. You should check that BMPs (including by way of illustration, linear barriers, soil stabilization techniques, sediment ponds/traps and inlet protection) are properly placed, appear to be working, and are maintained in accordance with the SWP.

M. **Are washouts properly located in accordance with the SWP and the Applicable Permit, in working condition, and no repairs necessary?** - You must verify that concrete, paint, and other washouts are properly placed, appear to be working, and are maintained in accordance with the SWP.

N. **Are hazardous materials managed in accordance with the SWP and the Applicable Permit?** - You must verify that hazardous materials are managed as required. You should check that storage and containment areas and controls and that management of hazardous materials (including leaks and spills) are implemented in accordance with the SWP.

O. **Are trash, construction debris, and other solid wastes managed in accordance with the SWP and the Applicable Permit?** - You must verify that trash, construction debris, and other solid wastes are managed as required. You should check that controls for the collection and storage of trash, construction debris and other solid wastes are properly placed, appear to be effective, and are maintained in accordance with the SWP.

P. If **portable toilets are provided are they properly located?** - You must verify that if portable toilets are provided they are properly located. You should check that portable toilets are located off roads and away from gutters and inlets and are properly anchored and maintained.

Q. **Are the Site Stormwater BMPs and the SWP consistent with each other?** - You must verify that Site BMPs and the SWP are consistent with each other. You should check that the BMPs shown on the SWP for the current stage of construction exist on Site and that the BMPs that exist on Site are shown on the SWP. In particular, you must make sure that any map or figure within the SWP is consistent with what has been installed on the ground. Even if we have installed additional BMPs not originally called for in the SWP, the additional BMPs must be shown on the map.

INSTRUCTIONS FOR COMPLETING THE RESPONSIVE ACTION LOG

- The system will generate and record each reference number from the Site Inspection Report under "Responsive Action Log Reference #" on the Responsive Action Log in the first column under "Responsive Action Log Reference #."

- For each recorded reference number, you must identify in the "Responsive Action" column the Responsive Action taken or to be taken.

- If a condition relates to a BMP, you must identify the applicable BMP by type and location (e.g., lot/block) and state the action necessary to achieve or maintain compliance with the SWP. If a condition relates to anything other than a BMP, you must briefly describe the condition that requires action and the action necessary to achieve or maintain compliance with the SWP.

- The date the Action Item was first identified must be recorded in the Responsive Action column. The date stamp will be recorded along with input into this column.

- The date recorded for a Responsive Action under the "Responsive Action" column will not change, even if the Responsive Action is carried over to subsequent Responsive Action Logs. When a Responsive Action is restated or carried over to a new Responsive Action Log, you must restate or carry over the date for the Responsive Action as identified on the first Responsive Action Log on which the Responsive Action appeared.

- The Site Stormwater Compliance Representative or the Stormwater Consultant Designee is responsible for recording and initialing the date each Responsive Action is completed. If the Site Stormwater Compliance Representative or the Stormwater Consultant Designee actually performed the Responsive Action, he or she should date and initial the Responsive Action Log the same day as the Responsive Action is completed. If a Contractor performs the Responsive Action, the Site Stormwater Compliance Representative or the Stormwater Consultant Designee must confirm that the Responsive Action has been completed and record the date the Responsive Action was completed by the Contractor.

Quarterly Compliance Review for (_____ to _____)

Site Name: _____

Division Name: _____

Date of Review: _____

Site Inspected By: _____

Division Stormwater Compliance Representative: _____

Site Stormwater Compliance Representative(s): _____

If the Division Stormwater Compliance Representative conducts the Quarterly Compliance Inspection:

- **The Division Stormwater Compliance Representative must complete boxes 1 and 2 for each of the topics listed below.**

If a Designee (e.g. a Stormwater Consultant) conducts the Quarterly Compliance Inspection:

- **The Designee must complete boxes 1 and 2 for each of the topics listed below, and**
- **The Division Stormwater Compliance Representative must complete box 3 for each of the topics listed below.**

Upon completion of the Quarterly Compliance Inspection, each of the following topics should be reviewed with all of the Site Stormwater Compliance Representatives. When the review is completed, the Division and all of the Site Stormwater Compliance Representatives must sign the form in the space provided below.

A. Physical Condition of the Site and BMPs
1. Are there compliance issues related to the physical condition of the Site or BMPs? (select one) **Y** or **N** If "yes," what are the issues? What are the causes?
2. If "yes" is selected in question 1, recommended actions to address these issues include:
3. If "yes" is selected in question 1 and the Quarterly Compliance Inspection was conducted by a Designee, does the Division Stormwater Compliance Representative have additional recommendations? **Y** or **N** If "yes," list recommendations:

B. *Adequacy of the Site Stormwater Plan and Recordkeeping Procedures*
1. Are there inadequacies in the Stormwater Plan or the recordkeeping procedures? (select one) **Y** or **N** If "yes," describe any inadequacies.
2. If "yes" is selected in question 1, recommended actions to address these issues include:
3. If "yes" is selected in question 1 and the Quarterly Compliance Inspection was conducted by a Designee, does the Division Stormwater Compliance Representative have additional recommendations? **Y** or **N** If "yes," list recommendations:

C. *Contractor Compliance with Stormwater Requirements*
1. Are there any stormwater compliance issues being caused by contractors or subcontractors? (select one) **Y** or **N** If "yes," what are the issues? What are the causes?
2. If "yes" is selected in question 1, recommended actions to address these issues include:
3. If "yes" is selected in question 1 and the Quarterly Compliance Inspection was conducted by a Designee, does the Division Stormwater Compliance Representative have additional recommendations? **Y** or **N** If "yes," list recommendations:

D. Number of Responsive Actions not Performed in the Time and Manner Required by the Applicable Permit
1. Are there compliance issues with the number of Responsive Actions not performed in the time and manner required by the Applicable Permit? (select one) **Y** or **N** If yes, what are the issues? What are the causes?
2. If "yes" is selected in question 1, recommended actions to address these issues include:
3. If "yes" is selected in question 1 and the Quarterly Compliance Inspection was conducted by a Designee, does the Division Stormwater Compliance Representative have additional recommendations? **Y** or **N** If "yes," list recommendations:

E. Recurring Compliance Issues at the Site
1. Are there recurring compliance issues at the Site? (select one) **Y** or **N** If yes, what are the issues? What are the causes?
2. If "yes" is selected in question 1, recommended actions to address these issues include:
3. If "yes" is selected in question 1 and the Quarterly Compliance Inspection was conducted by a Designee, does the Division Stormwater Compliance Representative have additional recommendations? **Y** or **N** If "yes," list recommendations:

Quarterly Compliance Review Summary for (_____ to _____)

1. **Was there a failure to obtain coverage for this Site under an Applicable Perm it prior to commencement of construction? If yes, how many days of discharge of pollutants from the Site to a water of the US occurred during the quarter covered by this Quarterly Compliance Inspection and Review and prior to obtaining coverage under an Applicable Permit?**

   Yes No N/A If yes, total number of days during quarter: _____

2. **If this is the first Quarterly Compliance Inspection and Review conducted for the Site, was there a failure to perform or material failure to document the Pre-Construction Inspection and Review?**

   Yes No N/A

3. **Was the Site Stormwater Compliance Representative trained in accordance with Beazer's stormwater training program at the time of this Quarterly Compliance Inspection and Review?**

   Yes No

4. **Site Inspections (the time period to be used in answering the questions below is the date range set forth above, which reflects either the Date of Entry or the last Quarterly Compliance Inspection and Review, whichever is later, to this Quarterly Compliance Inspection and Review):**

   Total number of all Site Inspections required during the quarter: _____

   Total number of missed or undocumented Site Inspections: _____

   Percentage Compliance: _____

   Total number of times a SWP was not available (or its location posted) during a Site Inspection: _____

   Percentage Compliance: _____

5. **Responsive Actions (the time period to be used in answering the questions below is the date range set forth above, which reflects either the Date of Entry or the last Quarterly Compliance Inspection and Review, whichever is later, to this Quarterly Compliance Inspection and Review):**

   Total number of Responsive Actions identified during quarter: _____

   Total number of Responsive Actions not addressed within the time allowed by the Applicable Permit: _____

   Percentage Compliance: _____

The Division Stormwater Compliance Representative must review the Quarterly Compliance Review Form with the Site Stormwater Compliance Representative(s), all of whom must sign the Quarterly Compliance Review Form.

_____ _____

Name Signature DATE

Site Stormwater Compliance Representative

Name Site Stormwater Compliance Representative	Signature	DATE
Name Site Stormwater Compliance Representative	Signature	DATE
Name Site Stormwater Compliance Representative	Signature	DATE
Name Site Stormwater Compliance Representative	Signature	DATE

I have reviewed the Quarterly Compliance Review Form with all current Site Stormwater Compliance Representative(s) for this Site.

Name Division Stormwater Compliance Representative	Signature	DATE

Beazer Homes

Division-Wide Summary Report

Appendix F

Division Wide Summary Report

Division Name: _____ **Division Stormwater Compliance Representative:** _____

Categories subject to stipulated penalties

Site Name	How may days of discharge of pollutants from the Site to a water of the US occurred during the quarter covered by this Division Wide Summary Report and prior to obtaining coverage under an Applicable Permit?	If this is the first Division Wide Summary Report including the Site, was there a failure to perform or material failure to document the Pre-Construction Inspection and Review?	Failure to perform or, if performed, a material failure to document a Site Inspection			Was there a failure to perform, or if performed, a material failure to document the Quarterly Compliance Inspection for the Site?		Was there a failure to perform, or if performed, a material failure to document the Quarterly Compliance Review for the Site?		Was there a failure to have a trained and certified Site Stormwater Compliance Representative at the time of the Quarterly Inspection?
			# required Site Inspections	# missed Site Inspections	% missed Site Inspections					
Total per category			# required Site Inspections	# missed Site Inspections	% missed Site Inspections	# required Quarterly Inspections	# missed Quarterly Inspections	# required Quarterly Reviews	# missed Quarterly Reviews	

Categories not subject to stipulated penalties

Failure to have SWP available or its location posted at the time of the Site Inspection			Failure to complete a Response Action within timeframe required by the Applicable Permit or, if completed, a material failure to record the information.		
# required Site Inspections	# of failures to have SWP on Site	% non-compliance	# response actions noted	# response actions not completed/ recorded	% non-compliance
# required Site Inspections	# of failures to have SWP on Site	% non-compliance	# response actions noted	# response actions not completed/ recorded	% non-compliance

ONCE COMPLETED, THIS FORM IS TO BE SENT TO THE FOLLOWING: (1) ALL SITE AND DIVISION STORMWATER COMPLIANCE REPRESENTATIVES WITHIN THE DIVISION THAT IS THE SUBJECT OF THIS FORM; (2) THE DIVISION PRESIDENT OR EQUIVALENT; AND (3) THE NATIONAL STORMWATER COMPLIANCE REPRESENTATIVE.

Total # required Quarterly Inspections and Reviews	Total # missed Quarterly Inspections and Reviews	% missed Quarterly Inspections and Reviews

Signature: _____

Name and Title: _____

Date: _____

Beazer Homes

Appendix G

National Compliance Summary Report

I. Overview

[PROVIDE A BRIEF AND GENERAL DISCUSSION OF THE DATA PRESENTED IN THIS REPORT.]

II. Information for Categories of Self-Reported Stipulated Penalties

_____ Number of days of discharge of pollutants from a Site to a water of the United States prior to obtaining coverage under an Applicable Permit

Name of Site	State	# of days

_____ Number of failures to perform or, if performed, a material failure to document a required Pre-Construction Inspection and Review

_____ Total number of required Site Inspections

_____ Percentage failure to perform or, if performed, a material failure to document a required Site Inspection

_____ Total number of required Quarterly Compliance Inspections and Quarterly Compliance Reviews

_____ Percentage failure to perform or, if performed, a material failure to document a required Quarterly Compliance Inspection or Review

_____ Number of Division Wide Compliance Summary Reports prepared 1-7 days after deadline

_____ Number of Division Wide Compliance Summary Reports prepared 8-30 days after deadline

_____ Number of Division Wide Compliance Summary Reports prepared 31-90 days after deadline

_____ Number of failures to have a Storm Water Trained Site Storm Water Compliance Representative at the time of a Quarterly Compliance Inspection and Review

III. Responsive Actions/SWP on Site

A. Responsive Actions

_____ Total number of required Responsive Actions

_____ Number of failures to complete Responsive Action within the time period required by the Applicable Permit or, if completed , a material failure to record the information.

_____ Percentage failure to complete Responsive Action within the time period required by the Applicable Permit or, if completed, a material failure to record the information.

B. SWP on Site

_____ Percentage failure to have, at the time of a Site Inspection, the SWP on site or its location posted

IV. Training Program

[WRITTEN EVALUATION OF BEAZER HOMES STORMWATER TRAINING PROGRAM AND A DESCRIPTION OF ANY SIGNIFICANT PROPOSED CHANGES FOR EPA APPROVAL.]

V. Signature and Certification

I hereby certify that the foregoing information was prepared under my direction or supervision. I certify that the responses are, 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 fines and imprisonment.

_____ _____ _____

By: [Name] Signature Date
National Storm Water
Compliance Representative

VI. Distribution

Once completed, this form must be sent to the following:

(1) The President, CEO or COO of Beazer Homes;
(2) All Division Presidents or Equivalent;
(3) All Division Storm Water Compliance Representatives; and
(4) The United States, as provided in Paragraphs 16, 40 and 77 of the Consent Decree; and
(5) The States of Colorado, Florida, Indiana, Maryland, Nevada, and Tennessee, and the Commonwealth of Virginia, as provided in Paragraphs 16, 40 and 77 of the Consent Decree.

Beazer Homes

Appendix H

Stormwater Compliance Training Program

Training Syllabus

Beazer Homes

Stormwater Compliance Training Program

General Training Syllabus

Given to:

Stormwater Compliance Representatives (Division and Site) and any Beazer employee who primarily and directly supervises (or who primarily and directly assists in the supervision of) construction activity in the field.

When Given:

Initial Training – Initial training for Stormwater Compliance Representatives and any Beazer employees who primarily and directly supervise (or who primarily and directly assist in the supervision of) construction activity in the field will be given no later than sixty (60) days after the Date of Entry, or no later than thirty (30) days after beginning work at a Site, whichever is later.

Refresher Training – Refresher training for Storm Water Compliance Representatives and Beazer employees who primarily and directly supervise (or who primarily and directly assist in the supervision of) construction activity in the field who were previously certified and who continue to work as Storm Water Compliance Representatives or Designees will be given on an annual basis.

Format:

Approximately 4.5 hours training session with an exam. The Stormwater compliance Training Program is a web based training program.

Certificate Issued:

Passing the course will result in certification as Stormwater Trained. Certification is valid for 15 months and shall be renewed annually through completion of a refresher course and exam.

Contents:

The Stormwater Compliance training class shall consist of the topics listed below.[1]

[1] The projected timeframes for each major topic in this syllabus are based on the approximate time needed to cover each topic. Actual times will vary due to numerous factors, including the size and nature of the audience.

I. SWPPP Compliance for Beazer Homes (1.5 hours)

a. Stormwater Pollution & the Clean Water Act

b. Preparing the SWPPP

c. Implementing & Inspecting BMPs

d. Posting & Recordkeeping

II. SWPPP Good Housekeeping Measures for Beazer Homes (1.5 hours)

a. Preventing Stormwater Pollution from Non-sediment Pollutants

b. Preventing & Controlling Spills

c. Handling Construction Materials

d. Enforcing Proper Waste Disposal

III. SWPPP Runoff, Erosion, and Sediment Controls for Beazer Homes (1.5 hours)

a. Controlling Runoff, Erosion, and Sediment

b. Runoff Controls

c. Erosion Controls

d. Sediment Controls

IV. Consent Order Implementation

a. Overview of Beazer's Stormwater Program

b. How to Contact Stormwater Representatives

c. Consequences for Failure to Comply with Stormwater Requirements and the elements of the Consent Order

d. Permits

e. Stormwater Plans

f. Pre-Construction Inspection and Review (PCIR)

g. Inspections

h. Maintenance

i. Quarterly Inspections and Review

j. Training Program

k. Stormwater Orientation Program

l. Contractors and Stormwater Consultants

Beazer Homes

Appendix J

Stormwater Compliance Training Program

Training Exam

Beazer Homes

Stormwater Compliance Training Program

Training Exam

Initial Training

All Stormwater Compliance Representatives and any Beazer employees who primarily and directly supervise or assist in the supervision of construction activity must participate in a Stormwater Compliance Training Program and must take and pass an exam to be certified Stormwater trained. A score of 80% or greater is required to be certified as Stormwater trained.

The training exam questions and answers are subject to a claim of Confidential Business Information by Beazer Homes. A description of the exam is included herein in lieu of the actual forms.

The exam consists of multiple choice questions concerning subject matter of the preceding Stormwater Compliance Training Program. The exam is divided into four parts: Part I tests the individuals' understanding of the Stormwater Pollution Prevention Plan ("SWPPP"), Part II tests the individuals' understanding of Beazer's good housekeeping measures, Part III tests the individuals' understanding of SWPPP runoff, erosion, and sediment controls and Part IV tests the individuals' understanding of the elements of the Consent Decree.

Refresher Training

All Stormwater Compliance Representatives and any Beazer employees who primarily and directly supervise or assist in the supervision of construction activity must also participate in an annual Stormwater Compliance Training Program refresher and must take and pass an exam to maintain their Stormwater training certification. A score of 80% or greater is required to maintain certification as Stormwater trained.

The refresher training exam questions and answers are considered Confidential Business Information of Beazer Homes. A description of the refresher exam is included herein in lieu of the actual forms.

The refresher exam consists of multiple choice questions concerning subject matter of the preceding Stormwater Compliance Training Program. The refresher exam is divided into four parts: Part I tests the individuals' understanding of the Stormwater Pollution Prevention Plan ("SWPPP"), Part II tests the individuals' understanding of Beazer's good housekeeping measures, Part III tests the individuals' understanding of SWPPP runoff, erosion, and sediment controls and Part IV tests the individuals' understanding of the elements of the Consent Decree.

Beazer Homes

Appendix K

Listed Contractors

1) Earthmoving Contractors
2) Storm Drain Installation Contractors
3) Water and Sewer Installation Contractors
4) Paving Contractors (including curb and gutter installation)
5) Masonry / Tile Contractors
6) Concrete Contractor
7) Retaining Wall Installers
8) Interior and Exterior Painting and Staining Contractors
9) Stucco Contractors
10) Landscape Installation Contractors
11) Framing / Siding Contractors
12) Drywall Contractors
13) Latrine Contractors

Beazer Homes

Appendix L

List of Contractor Do's & Don't's

DO:

- **DO** go to the Site Stormwater Compliance Representative with any questions regarding stormwater pollution prevention or this list.
- **DO** place all trash and debris in the receptacles provided.
- **DO** use designated washout areas for cleaning equipment (e.g., concrete trucks, except those with self contained washouts, must use the designated concrete washout area).
- **DO** report any spills of petroleum or other chemicals to the Site Stormwater Compliance Representative.
- **DO** immediately comply with any instructions given by the Site Stormwater Compliance Representative or other Beazer Homes personnel.

DON'T:

- **DON'T** allow any solvents, chemicals, or rinse liquids to drain into a street or storm drain, a creek, waterway, other water body.
- **DON'T** disable, damage, or interfere with any silt fence or similar erosion control.
    - For example, **DON'T** run over a silt fence or straw wattle or forget to replace any silt fence or straw wattle you temporarily relocate.
- **DON'T** disable, damage, or interfere with any inlet controls.
    - For example, **DON'T** remove inlet controls (unless an action is needed to prevent flooding) or place dirt or debris in or adjacent to inlet controls.
- **DON'T** disable, damage, or interfere with any stormwater pollution prevention controls at construction entrances.
    - For example, **DON'T** evade stone construction entrances.
- **DON'T** disable, damage, drive over, or interfere with any geotextile, matting, or mulch.
- **DON'T** disable, damage, or interfere with any other stormwater pollution prevention controls.

Remember: The failure to comply with stormwater requirements at this site is a breach of your contractual obligations and can result in economic sanctions or termination.

Beazer Homes

List of Sites Subject to Covenant Not to Sue

Appendix M

APPENDIX M

LIST OF SITES SUBJECT TO COVENANT NOT TO SUE

The following list is intended to include all of the Sites:

A. Where Plaintiffs have knowledge, through inspections conducted by Plaintiffs or Plaintiffs' consultants, responses to information requests issued by Plaintiffs pursuant to Section 308 of the Clean Water Act ("CWA") or equivalent state law, or information obtained from a non-Party, of an alleged violation of: (1) Section 308 of the CWA or a state law equivalent to Section 308, relating to Storm Water Requirements, (2) the prohibition in Section 301(a) of the CWA or an equivalent prohibition under state law, against discharging pollutants without an Applicable Permit; or (3) the conditions, limitations and requirements of an Applicable Permit; or

B. That Beazer owned or operated on September 1, 2010;

This description of the list is provided for explanatory purposes and does not modify the list. The release and covenant not to sue is only applicable to the Sites on this list. The list may be modified pursuant to Paragraph 85 of the Consent Decree to add Sites that were inadvertently omitted but that meet the above criteria.

APPENDIX M

Site Name	Location	Municipality	Municipality/ County	State
Arroyo Verde	SEC of McCartney Rd & Weaver Rd	Casa Grand	Pinal	AZ
Canyon Trails	NEC of Lower Buckey Rd & Cotton Lane	Goodyear	Maricopa	AZ
Country Place	2215 South 99th Avenue	Tolleson	Maricopa	AZ
CW Ranch (aka Starlight Trail)	402 S 114th Lane	Avondale	Maricopa	AZ
Desert Rose	SW of 32nd ST & Baseline RD	Phoenix	Maricopa	AZ
Montelena	NEC of Hawes & Chandler Heights	Queen Creek	Maricopa	AZ
Morning Sun Farms	NWC Hunt Highway & Village Lane	Queen Creek	Pinal	AZ
Pueblo Verde (aka Glenmont)	SEC Yuma Rd & Sarival Ave	Goodyear	Maricopa	AZ
Seville	SWC Chandler Heights & Higley Rd	Gilbert	Maricopa	AZ
Sierra Colina	SWC 51st Ave & Southern Ave	Laveen	Maricopa	AZ
Sierra Montana	NE of 185th Drive & Lisbon Lane	Surprise	Maricopa	AZ
Silva Mountain	8121 South 23rd Dr	Phoenix	Maricopa	AZ
Surprise Farms	18327 W Carmen Drive	Surprise	Maricopa	AZ
Tessera	NWC of 75th Ave & Bethany Home RD	Glendale	Maricopa	AZ
Trianda Terrace	Falcon Dr & Indian School Rd	Goodyear	Maricopa	AZ
Villago	2890 N Blossom Lane	Casa Grand	Pinal	AZ
Villas at Toscana	BaseLine Rd & 32nd Street	Phoenix	Maricopa	AZ
Asheland Meadows	SW Corner Reina Rd & Old Farm Ave	Bakersfield	Kern Co	CA
Assemblage	34870 Leon Rd	Winchester	Riverside	CA
Barcelona	Ave 50 and Monroe ST	Indio	Riverside	CA
Bella Sol	30th st w and Lancaster Blvd	Lancaster	Los Angeles	CA
Capital Village	Zinfandel & International	Rancho Cordova	Sacramento	CA
Cobblestone	SW corner Eucalyptus Ave and Fir Ave	Moreno Valley	Riverside	CA
Copperleaf (Palmdale 66)	Southwest of Palmdale Blvd and 55th	Palmdale	Los Angeles	CA
Cottages	Fairway & Rancho Vista Blvd	Palmdale	LA Co	CA
Foothill Promenade	Foothill Ave. & Benson	Upland	San Bernardino	CA
Fox Hollow	Q st. & 6th Ave	Sacramento County	Sacramento	CA
Goldenfields	East of Nason between Euc & Dracaea	Moreno Valley	Riverside	CA
Groves at Sunnyside Point	Peach St and Church St	Fresno	Fresno	CA
Hampton Place	Stockton Blvd & Orange Ave.	Sacramento County	Sacramento	CA
Medallion	Windermere St & Panama La	Bakersfield	Kern Co	CA
Montage	Plum Canyon Road & Santa Clarita Road	Saugus	Los Angeles	CA
Natomas Field	Arena Blvd. & East Commerce Way	Sacramento	Sacramento	CA
Red Sky	SE corner Mesa View Dr & La Mesa Rd	Victorville	San Bernardino	CA
Rockcliffe	NW of Eucalyptus / Fir	Moreno Valley	Riverside	CA
Rolling Hills	Garbani Rd / Haleblian Rd	Menifee	Riverside	CA

Sereno Heights	Kitching St. & Shalu Ave.	Moreno Valley	Riverside	CA
Silver Leaf	Ave S & Putney St	Palmdale	Los Angeles	CA
Silver Leaf 2	SE corner Ave S and Hillcrest Dr.	Palmdale	Los Angeles	CA
Somerset Creek	Ave P-8 West & Somerwinds Rd	Palmdale	Los Angeles	CA
Stoneridge	SW corner Eucalyptus Ave and Fir Ave	Moreno Valley	Riverside	CA
Terra Bella	Garbani Rd. and Palomar Rd	Menifee	Riverside	CA
The Arbours	600 E Bonita Ave	Pomona	San Bernardino	CA
Aspen Creek Filing 7	13825 Teal Creek Drive		Broomfield	CO
Canterbury Crossing	Main Street and Canterbury Parkway	Parker	Douglas	CO
Cherrywood Park Filing 1	136th Avenue & Colorado Blvd.		Thornton	CO
Copperleaf Filing A	E. Chenango and S. Picadilly		Arapahoe	CO
Fronterra Village/Fronterra Village Townhomes Fil. 2	10000 Chambers Road/96 Way & 96 Cir.		Commerce City	CO
Homestead Hills, Filing 3	136th Avenue & Colorado Blvd.		Thornton	CO
Spring Valley Ranch	County Rd 17-21 and So Augusta Ave	Elizabeth	Elbert	CO
Falcon Highland Fil 1,2 & 3	Meridian & Rolling Thunder, S of Woodmen Rd	Colorado Springs	El Paso	CO
Saddle Rock Subdivision 7	Arapahoe Rd & S Valdi Ct	Aurora	Arapahoe	CO
Asbury Chase	114 Asbury Loop	Middletown	New Castle	DE
Ashley Manor	SR 54 and SR 20	Selbyville	Sussex	DE
Crossland at the Canal	202 Ann Drive	Middletown,	New Castle	DE
North Beach	Rt 1 and Fred Hudson Road	Bethany Beach	Sussex	DE
Ridings	Beaver Dam Road and Highlands Way	Lewes	Sussex	DE
Willow Grove	103 Plymouth Place	Middletown,	New Castle	DE
Amelia View 5	Amelia Bluff Dr. & Starratt Rd	Jacksonville	Duval	FL
Calabria Cove	Calabria Springs Cove Drive		City of Sanford	FL
Colony West	Montegue & Old Memorial/Tampa		Hillsborough	FL
Conroy Club	Conroy Club Drive		Orlando	FL
Country Chase	Old Memorial Blvd.		Hillsborough	FL
Country View	Henderson Road		Tampa	FL
Creekview	Balm-Riverview Road		Hillsborough	FL
Cumbrian Lakes	Cumbrian Lakes Dr.		Kissimmee	FL
Danforth	Daniels Pkwy & Palamino Rd. (Mid-Florida)		Lee	FL
Deerwood Pl	4464 Southside Blvd	Jacksonville	Duval	FL
Dupree Lakes	6153 Everlasting Pl.	Land O' Lakes	Pasco	FL
Durbin Crossing	CR-223 (North Durbin Pkwy) Huntston Way	Jacksonville	St Johns	FL
East Bay Lakes	East Bay Road/Gibsonton		Hillsborough	FL
Enclave at Moss Park	Moss Park Rd.	Orlando	Orange	FL
Fish Hawk Ranch	16020 Starling Crossing Dr., Lithia	Hillsborough	Hillsborough	FL
Glen Abbey	Daniels Pkwy & Palamino Rd. (Mid-Florida)		Lee	FL

Gulfwinds	1301 Blue Marlin Blvd., Holiday	Pasco	Pasco	FL
Hamilton Park	Hamilton Avenue		Hillsborough	FL
Hampton Lakes	Racetrack Rd & Nine Eagles Rd, Tampa	Hillsborough	Hillsborough	FL
Hawks Landing	2807 Hawks landing Blvd	Lynn Haven	Bay	FL
Heritage Commons	Dodd Rd.	Winter Springs	Seminole	FL
Las Calinas	Los Congress road and US1	St Augustine	St Johns	FL
Legacy	Holden Ave.	Orlando	Orange	FL
NEC Beach Blvd & Kernan		Jacksonville	Duval	FL
Nona Crest	9001 Narcoossee Road		Orlando	FL
Oak Park	66th Avenue		Pinellas	FL
Ocean Cay	A1A		Nassau	FL
Palma Vista	Saint Stevens Court		Orlando	FL
River Chase	North River Road		Hillsborough	FL
Riverside II	Jungle Trail & SSR 510 (Vero)		Indian River	FL
Royal Oaks	Nonastone Run		Seminole County	FL
Sanctuary at West Haven			Davenport	FL
Sawgrass	Weatherbee Rd. & Boggy Creek Rd.	Orlando	Orange	FL
Sawgrass Village	4734 68th Terrace, Penellas Park	Pinellas Park	Pinellas	FL
Somerset	19601 Cypress View Drive	Ft. Myers	Lee	FL
Southwood	Merchants Row Blvd and Four Oaks Blvd	Tallahassee	Leon	FL
Stonehurst 1C/1F/2A	C.R. 210 west of I-95		St. Johns	FL
Tamaya Pods G & H	Beach Blvd & Kernan Blvd	Jacksonville	Duval	FL
Valencia Lakes	Immokalee Rd. & Randall Blvd. (Mid-Florida)		Collier	FL
Venetian Harbor	Gandy Blvd./Snug Harbor		Pinellas	FL
Verano	Verano at Bartram Park Blvd.	Jacksonville	Duval	FL
Victoria Park	Orange Camp Rd. & S. Blue Lake Ave.	Deland	Volusia	FL
Villages of Westport	Braddock Rd & Mabley Rd W	Jacksonville	Duval	FL
Whisper Dunes	101 Sand Oak Blvd	Panama City Beach	Bay	FL
Windsor Landing	205 Calliope Street		Ocoee	FL
Ashely Manor	Ashley Manor & Coleman Road	Roswell	Fulton	GA
Atkinson	Atkinson Park Circle	Lawrenceville	Gwinnett	GA
Atlantic Station	16th St./1217 Mecaslin St.		Fulton	GA
Bismark Place Phase 1	2039 Rockledge Rd.	Atlanta	Fulton	GA
Cobblestone Creek	Veterans Memorial Pkwy. & Kitchens Rd.	Cobb	Cobb	GA
Copper Springs	Plum Frost Ct.	Oakwood	Gwinnett	GA
Cove at Mill Creek	Mill Springs Circle	Buford	Gwinnett	GA
Dillard St. Crossing	Dillard Crossing	Tucker	Dekalb	GA
Gates at Johns Creek	Technology Circle & New Boyd Rd	Johns Creek	Fulton	GA

Grant Park	Coggins Drive & Confederate Ave.	Atlanta	Fulton	GA
Hampton Station	400 North Hampton Station Trail	Cherokee	Cherokee	GA
Highlands Pkwy	Highlands View Dr.	Smyrna	Cobb	GA
Hunt Club	855 Jimmy Deloach Pkwy	Pooler	Chatham	GA
Lakes at Sugarloaf	Old Peachtree Rd & Sugarloaf Pkwy.	Duluth	Gwinnett	GA
Liberty Crossing	Independence Way	Roswell	Fulton	GA
Mill Street Park	Creek View Ln.	Roswell	Fulton	GA
Mountain View/Mountain View Glens	Rachel's Ridge/Anna Ruby Lane	Kennesaw	Cobb	GA
Old Norcross	Whistle Stop Dr. - Norcross	Norcross	Gwinnett	GA
Old Town Bethelview	Old Towne Ln.	Cumming	Forsyth	GA
Olde Union Preserve	Union Hill Rd & Fowler Rd	Forsyth	Forsyth	GA
Paden Cove	Paden Cove Trail	Lawrenceville	Gwinnett	GA
Redwood Cove	Redwood Drive	Norcross	Gwinnett	GA
Sugarloaf	Arbor Gate Drive	Lawrenceville	Gwinnett	GA
Thorngate	Kelly Mill Rd & Thorngate Dr.	Forsyth	Forsyth	GA
Westchase	3224 Westchase Dr.	Gwinnett	Gwinnett	GA
Wyndham	Yacht Terrace		Alpharetta	GA
Andover	Moontown Rd and East 191 St	Noblesville	Hamilton	IN
Clermont Lakes	S of CR 450 N on Westside of Raceway Rd	Indianapolis	Hendricks	IN
Deer Path	800 ft East of Wolf Run and Dry Creek Rd	Noblesville	Hamilton	IN
Eagles Nest	6236 Easgles Nest Blvd	Whitestown	Boone	IN
Edgewood Trace	Thompson Rd and Franklin	Indianapolis	Marion	IN
Fairways At Prairie Crossing	N. E. corner of Lakeview Dr and Prairie Crossing Dr	Noblesville	Hamilton	IN
Greens at Prairie Crossing	18690 Round Lake Road	Noblesville	Hamilton	IN
Lochaven	15029 Midland Lane	Nobleville	Hamilton	IN
Logan's Pointe	156th st west of Boden Rd.	Nobleville	Hamilton	IN
Oaks at Windridge	6498 Southern Oak	Brownsburg	Hendricks	IN
Orchard Valley Farms	N German Church Rd and E 42nd Street	Indianapolis	Marion	IN
River Run	Mann Rd and Epler	Indianapolis	Marion	IN
Shadow Creek Farms	S. W. corner of CR 200 S And CR 150 W	Columbus	Bartholomew	IN
South Avalon Estates	14503 E. 126th Street	Fishers	Hamilton	IN
Spring Run At Winding Ridge	5612 High Timber Ln	Indianapolis	Marion	IN
Springs at Deer Crossing	CR 700W approx 1/4mi S of CR 900N	McCordsville	Hancock	IN
Stonechase	ST RD 48 and Stonechase Crossing	Bloomington	Monroe	IN
Sunchase Vista	CR 100 S 1 mile west of Raceway Rd	Avon	Hendricks	IN
The Groves At Beechwood Farms	W of Dan Jones Rd and N of US 36	Avon	Hendricks	IN
The Groves at Camby Village	Trotter Rd and Sansa Street	Camby	Marion	IN
The Highlands	Hennessy and S Rockport Rd	Bloomington	Monroe	IN

The Ridge at Prairie Crossing	Hague Rd and Lakeview Dr	Noblesville	Hamilton	IN
Treyburn Manor	9631 E. Rawles Ave	Indianapolis	Marion	IN
Tuscany Village	1317 Tuscany Dr.	Greenwood	Johnson	IN
Walker Farms	N.W. corner of CR 400 S and CR 650 E	Whitestown	Boone	IN
West Village At West Clay	12775 Horseferry Rd	Carmel	Hamilton	IN
Westbourne	N. W. corner of Marsh Rd and 71st	Indianpolis	Marion	IN
Wildcat Park	Five Points and Kidwell	Indianapolis	Marion	IN
Williamsburg Village	Approx 1/4mi S of CR 600 N and Raceway Rd	Indianapolis	Hendricks	IN
Yorktown Woods	1/4 mile west of Carey Rd. on Jeremy Dr. in the back of Foster Estates	Carmel	Hamilton	IN
Coldstream Station	Sandersville Road	Lexington	Fayette	KY
Elkhorn Green	Route 460	Georgetown	Scott	KY
Marehaven - Phase III	Alexandria Drive	Lexington	Fayette	KY
Villages at Duckers Lake	Village Drive and Highway 121, Leestown Rd		Frankfort	KY
Villages of Elkhorn Green	Route 460		Georgetown	KY
Walnut Creek - Phase I, II, III	Richmond Road	Lexington	Fayette	KY
Adamstown	Tracey Bruce Drive & Moutvale Road	Adamstown	Frederick	MD
Ballinger Creek	Ballenger Center Dr and Cawley Dr	Frederick	Frederick	MD
Bonnie View Estates - Parke	Smith Ave and Pebble Brooke Rd	Baltimore	Baltimore	MD
Brighton Place	Central Avenue	Prince Georges	Prince Georges	MD
Cedar 2 - Forest Glen	New Waugh Chaple Rd and Old Waugh Chapel Rd	Odenton	Anne Arundel	MD
Collegiate Acres - Greenfield	Route 58 and Terps Blvd	Hagerstown	Washington	MD
Deep Harbour	Route 50 and Maryland Ave	Cambridge	Dorchester	MD
Dove Barrington	Burbage and Windmill Road	Millville	Sussex	MD
Greenspring Quarry	Quarry Lake Dr and Greenspring Ave	Baltimore	Baltimore	MD
Greenway Village - Arora Hills	Ridge Road and Skylark Road	Clarksburg	Montgomery	MD
Jefferson Place	Montgomery Road and Bosley Road	Ellicott City	Howard	MD
Linton at Ballenger	Elmer Derr Road & Christian Kemp Dr	Frederick	Frederick	MD
Alexander Crossing	Goodman Rd. and Alexander Rd.		Olive Branch	MS
Ashton Hall	Sherron Road & Mineral Springs Road	Durham	Durham	NC
Austin Creek - 56' series	Austin View Blvd & Longmont Drive	Wake Forest	Wake	NC
Austin Creek - 70' series	Austin View Blvd & Longmont Drive	Wake Forest	Wake	NC
Autumn Park	Avent Ferry	Holly Springs	Wake	NC
Barbee Meadows	Barbee	Durham	Durham	NC
Bloomsbury	5045 Cary Glen Blvd	Cary	Wake	NC
Brantley Place	Hwy 21		Mooresville	NC
Cardinal Lake	Fletchers Chapel	Durham	Durham	NC
Carthage Colonies/Reserve	Carthage St./Duke of Gloucester & Chownings Dr	Sanford	Lee	NC

Churton Grove/Churton Grove SF	Churton Grove Blvd & Berryman Blvd/Ainsworth Blvd	Hillsborough	Orange	NC
Covil	Broad Street & Covil Street	Wilmington	New Hanover	NC
Creekside/Coulwood	Valleydale Road		Mecklenburg	NC
Dilworth Chase	101 Garrison Road	Charlotte	Mecklenburg	NC
Dove Meadows	Southern Street & Adams Street - Wilmington		New Hanover	NC
Glencroft	501 Glencroft Drive		Wingate	NC
Greenecroft	Hwy 21		Mooresville	NC
Harrison Park	Hwy 16		Union	NC
Holly Glen	Evergreen View Trace & Magnolia Meadow Way	Holly Springs	Wake	NC
Hervay Place	Dawson Street & 10th Street	Wilmington	New Hanover	NC
Lake Park	6046 Crest Circle		Indian Trail	NC
Little Hampton			Mecklenburg	NC
Mitchell Mill (McKinley Mill)	Mitchell Mill & Forestville Rd.	Ralelgh	Wake	NC
Monteith Pl.	Hwy 115		Mecklenburg	NC
Moores Chapel	Eastfield Road		Mecklenburg	NC
Morehead Commons	South Clarkston and West Morehead Street	Charlotte	Mecklenburg	NC
Park at Auburn	Woodcroft Pkwy	Durham	Durham	NC
River View	River View Subdivision		Lowell	NC
Samuels Keep	W. Chatham Street & High House Road	Cary	Wake	NC
Sandpiper Bay	Old Georgetown Road		Brunswick	NC
Sawyers Mill	Bells Lake	Apex	Wake	NC
Southern Chase	Zion Church Road		Concord	NC
Springfield	Mitchell Mill & Forestville Rd.	Raleigh	Wake	NC
Stewarts Crossing	Camp Stewarts Road		Mecklenburg	NC
Stonehill Estates	Mineral Springs Rd.	Durham	Durham	NC
Stowe Creek/Stowe Creek II	Shopton Road/Shopton Road West		Mecklenburg	NC
Summer Meadows	Hebron Rd/Danube Ln/Denfield St./Winding Brook L	Durham	Durham	NC
Sunset Village	Sunset Road		Mecklenburg	NC
Tennyson Place	Light Brigade Lane & West Millbrook Road	Raleigh	Wake	NC
Tibble Creek			Mecklenburg	NC
Villages at Wesley Chapel	Airport Road		Monroe	NC
Westgate	Westgate Rd. & Ebenezer Ch Rd.	Raleigh	Wake	NC
Willow Creek	Old Honeycut Rd.	Fuquay-Varina	Wake	NC
Wyndfall	Old Georgetown Road		Brunswick	NC
Wyndmoor at the Park	S. Alston Avenue & Ed Cook Road	Durham	Durham	NC
Wynterfield/Wynterfield Continuation	Courtney Creek Blvd./Contravest Pkwy	Durham	Durham	NC
Arbor Ridge			Charlotte	NC
Auburn Chase	71 Buckeye Road	Woolwich	Gloucester	NJ

Garrison Estates	1386 Carmel Ave.	Vineland	Cumberland	NJ
Gatherings at Cape May	5 Lochalsh Lane , NJ	Rio Grande	Cape May	NJ
Gatherings at Haledon	1305 Gatherings Drive	Haledon	Passsaic	NJ
Richwood Crossing	475 Aura Road	Glassboro	Gloucester	NJ
Gatherings at East Greenwich	330 Friendship Rd	Clarksboro	Gloucester	NJ
Kings Gate East	800 Castleton Drive	Mickleton	Gloucester	NJ
Parkside at Mountain View	451 Pleasant View Road	Hillsborough	Somerset	NJ
Entrada Del Bosque	Mountain and Ladera	Albuquerque	Bernalillo	NM
High Range	40th and Inca Rd NE	Rio Rancho	Sandoval	NM
Mesa Encantadas	Lincoln Ave and Camino Encantada	Rio Rancho	Sandoval	NM
Centennial	Centennial Parkway and Hualapai Way	Las Vegas	Clark	NV
Dover Place	Craig Rd.and W. Nellis Blvd.	Las Vegas	Clark	NV
Mountains Edge (Mesa, Valla and Stonehurst)	Mountains Edge Parkway and Pollock Dr.	Las Vegas	Clark	NV
Northstar	Martin Luther King Blvd / Alexander Rd	Las Vegas	Clark	NV
Saratoga	Farm and Shaumber	Las Vegas	Clark	NV
Tesora at Burson Ranch	Heritage Dr. / Malibou Ave	Pahrump	Nye	NV
Weston Hills	Galleria Dr. & McCormick Rd	Henderson	Clark	NV
Westwind	Decatur Blvd / Grand Teton Dr.	Las Vegas	Clark	NV
Windriver	Warm Springs and Race Track	Henderson	Clark	NV
Enclave at Hamptonburgh	93 Sarah Wells Trail	Campbell Hall	Orange	NY
Glenview Hills	34 Hill View Drive	Florida	Orange	NY
Riverside at Walden	2 Hidden View Drive	Walden	Orange	NY
Kingston Square	2552 Castor Ave	Philadelphia	Philadelphia	PA
Arlington - Phases 1-4	Parkwest		Town of Mt. Pleasant	SC
Avalon	Carolina Forest Blvd.		Horry	SC
Bolton's Landing	Bees Ferry Rd and Savannah Hwy	Charleston	Charleston	SC
Bridges of Summerville Phases 1-5	Midland Pkwy and Burton Ave.		Summerville	SC
Cameron Village	US 707 near Bay Rd	Myrtle Beach	Horry	SC
Drakesborough	Hwy 78 and Orangeburg Rd	Summerville	Dorchester	SC
Fox Horn	Forestbrook Rd. near Halyard Way	Myrtle Beach	Horry	SC
Grand Oaks - Phases 1-8	Bee's Ferry Rd.		Charleston	SC
Hardin at Tanner Plantation	In Tanner Plantation at rear of Ibis Glade	Hanahan	Berkeley	SC
Hillsborough	On Hwy 90 6mi notrh or intersection with US Hwy 501, Conway	Conway	Horry	SC
Inverness	Connamara Drive		Horry	SC
Lafayette Park	Little River Rd. near state Hwy 50	Little River	Horry	SC
Ledgend Oaks 7 & 10	Ashley River Road		Dorchester	SC

Moss Grove	Just south of Moncks Corner on US 51	Moncks Corner	Berkeley	SC
Reminisce	W. Butternut Rd near Summerset Ln	Summerville	Dorchester	SC
River Oaks	River Oaks Drive		Horry	SC
Royal Oaks	Montague Plantation Road	Goose Creek	Berkeley	SC
Spring Mill	Calabash Rd. just south of Mineloa Ave	Calabash	Brunswick	SC
St. Andrews	Connemara Drive		Horry	SC
True Blue	Blue Stem Rd.		Georgetown	SC
Turtle Cove	Forestbrook Road	Myrtle Beach	Horry	SC
Walkers Woods	Carolina Forest Blvd near Southgate Pkwy	Myrtle Beach	Horry	SC
Abbington Park	Longfellow Drive	Nashville	Davidson County	TN
Adelaide Park	Lee Victory Parkway and Callaway Farms Drive	Smyrna	Rutherford	TN
Asheford Crossing	Asheford Trace	Antioch	Davidson County	TN
Avondale Park	1028 Nunnery Lane	Nashville	Davidson	TN
Ballenger Farms	Creekside Drive and Cowan Drive	Nolensville	Williamson	TN
Barry Farms P.D. Ph. 5	Hacks Crossing & Marsha Woods		Shelby	TN
Bradburn Village	Pin Hook Road at Murfreesboro Road	Nashville	Davidson	TN
Bradford Park aka Providence Subdivision	Mt. Juliet Road at I-40	Mt. Juliet	Wilson	TN
Bridgemore Village	Critz Lane and Pantall Road	Thompsons Station	Williamson	TN
Brookfield	Brookfield Drive		Brentwood	TN
Cambridge Forest	Bridgecrest Drive	Antioch	Davidson County	TN
Cheswicke Farm	Liberty Hills Drive	Franklin	Franklin	TN
Hampton Hall	Hampton Hall Way	Hermitage	Davidson County	TN
Hampton Woods Subd.	Egypt Central & Hampton Manor Ln.		Shelby	TN
Hidden Creek	Hidden Creek Drive	Antioch	Davidson County	TN
LeMoyne Gardens (College Park)	Mississippi St. & Neptune St.	Memphis	Shelby	TN
Lexington Point	Lexington Point Drive	Nashville	Davidson County	TN
McKay's Mill - Classic/Premier	Market Street	Franklin	Franklin	TN
Merritt Downs	Wyntergrace Farm Rd.	Old Hickory	Davidson County	TN
Oaks Pointe	Lebanon Road and Prowell Lake Road	Lebanon	Wilson	TN
Pine Forest	Pine Forest Drive	Nashville	Davidson County	TN
Richland Hills Subd.	Gainsville Dr. & Richland Rd.		Tipton	TN
River Bridge/Community	Harpeth Springs Drive/8100 Coley Davis Road	Nashville	Davidson County	TN
Riverwalk	Rivervalley Drive	Nashville	Davidson County	TN
Royal Oaks Subd.	Egypt Central & Northwood Hills Drive		Shelby	TN
Shadow Creek aka Providence	Sunnymeade Drive and Rutland Road	Mt. Juliet	Wilson	TN
Shadow Glen	Nashville	Nashville	Davidson County	TN
Stanford Village	Stanford Village Drive		Davidson County	TN
Sullivan Run	Wisteria Drive	Franklin	Franklin	TN

Tanyard Springs (Wilkes Creek)	Tanyard Springs Drive	Spring Hill	Spring Hill	TN
The Grove at Oakland Subd.	Highway 64 & Pine Wood Drive		Oakland	TN
Traemoor Village	North side of Charlotte Pike, east of Sawyer Brown Road	Nashville	Davidson	TN
Trails of Arlington P.D.	Airline Road & Arlington Trail		Arlington	TN
Truxton Park	Remington Park Rd.	Hermitage	Davidson County	TN
Tuscan Gardens	Graystone Road and Benders Ferry Road	Mt. Juliet	Wilson	TN
Villages of Riverwood	Hoggett Ford Road and Dodson Chapel Road	Hermitage	Davidson	TN
Willoughby Station/Classic/Premier	South Green Hills Road/Willoughby Station Blvd	Mt. Juliet	Wilson	TN
Willowvale at Harvey Springs	Duplex Road and Hwy. 31	Spring Hill	Williamson	TN
Woodridge at Nashboro Village	Flintlock Ct.	Nashville	Davidson County	TN
Andover Farms	4700 Blk of South Post Oak	Fresno	Fort Bend	TX
Ashford Place	16231 Latticebine Dr. (off site)	Tomball	Harris	TX
Blackhorse Ranch	11414 Columbia Pines	Cypress	Harris	TX
BonBrook	514 Dovecraft Ln	Rosenburg	Fort Bend	TX
Cardiff Ranch	27422 Canyon Ranch Drive	Katy	Fort Bend	TX
Cinco Ranch Southwest	11515 East Lake Gables (off site)	Katy	Fort Bend	TX
Cobb Farms	Eldorado Pkwy & Legacy Drive	Frisco	Denton	TX
Creekside Park West	21738 Colter Stine Dr (off site)	Tomball	Harris	TX
Creekview Addition	US 380 & Creekview Drive	Princeton	Collin	TX
Cypress Trails	11626 Brentcross Drive	Tomball	Harris	TX
Durham Park	Kessway Lane	Houston	Harris	TX
Eagle Springs	17402 Dutch Harbor	Humble	Harris	TX
Heathstone Addition	Branchwood Dr. and Beltline Rd	Lancaster	Dallas	TX
Inverness	21738 Colter Stine Dr (off site)	Tomball	Harris	TX
Jamison Landing	Little Rock Court	Pearland	Brazoria	TX
Lake Parks	Bee Drive south of Camp Wisdom Rd	Grand Prairie	Tarrant	TX
Lakes of Highland Glen	1725 and 1/2 Brighton Brook	Pearland	Bazoria	TX
Lakes of Pine Forest	Grand Chateau	Houston	Harris	TX
Legends Ranch	21738 Colter Stine Dr (off site)	Spring	Mongomery	TX
Mountain Creek	Sheridan Drive and Hardy Road	Dallas	Dallas	TX
Northcrest Village	21738 Colter Stine Dr	Spring	Harris	TX
Paloma Creek South	US 380 and Navo Road	Little Elm	Denton	TX
Park Lakes	9811 Layton Ridge Drive	Humble	Harris	TX
Pine Creek at Canyon Lakes West	8506 Drango Valley	Cypress	Harris	TX
Preserves at Pecan Creek	Smoketree Trail and Lakeview Blvd.	Denton	Denton	TX
Regal Oaks	4118 Juniper Meadows	Houston	Harris	TX
Remington Grove	19002 Walbrook Ln	Houston	Harris	TX

Rolling Meadows	NE cor. Park Vista & Keller/Haslet	Fort Worth	Tarrant	TX
Settlement at Craig Ranch.	1/4 mile W of intx Stacy & Alma	McKinney	Collin	TX
Spring Meadow	O'day Road and Hickory Hollow Dr.	Pearland	Brazoria	TX
Stoneridge at Blackhorse Ranch	26842 Trinity Trail	Cypress	Harris	TX
Stoney Creek	Collins Road & Stoney Creek Blvd.	Sunnyvale	Dallas	TX
Summerlyn	4118 Juniper Meadows	Houston	Harris	TX
Sunset Pointe Phs. 8, 9 & 10	E. of intx of Hart & Walker	Little Elm	Denton	TX
Sunset Ridge	17402 Dutch Harbor (off site)	Humble	Harris	TX
Telfair	6819 Lavington Way	Sugarland	Fort Bend	TX
The Park at Arbordale	16231 Latticebine Dr.	Cypress	Harris	TX
Village of Indian Trails	Pawnee Bend Drive & Cheyene Bend	Cypress	Harris	TX
Villas at Chishom Ridge	Blue Mound Rd & Grand Central Pkwy	Fort Worth	Tarrant	TX
Waterstone	3226 Sabine Spring	Houston	Harris	TX
Waterview Estates	5035 Beechfern Drive	Houston	Harris	TX
Wentworth Villas	Valley Ridge Blvd. & Barksdale Drive	Lewisville	Denton	TX
Westheimer Lakes North	26919 Harwood Heights Drive	Katy	Fort Bend	TX
Westhiemer Lakes	11515 East Lake Gables	Richmond	Fort Bend	TX
Wheatland Meadows	E. Wheatland and IH 35	Dallas	Dallas	TX
Austins Landing	101 Macon Drive	Stafford	Stafford	VA
Brambleton	19297 Winmeade Drive	Loudoun	Loudoun	VA
Fawn Lake	Fawn Lake PUD	Spotsylvannia	Spotsylvania	VA
Lansdowne	101 Macon Drive	Loudoun	Loudoun	VA
Market Center	6299 Aster Haven Circle	Haymarket	Prince William	VA
New Bristow	10605 Poagues Battery Drive	Bristow	Prince William	VA
Somerset Farms	35109 Chesterfield Road	Locust Grove	Spotsylvania	VA
Village Green	43168 Alex Street	Leesburg	Loudoun	VA
Colonial Hills	31 Swearingen Way	Shepherdstown	Jefferson	WVA