

SECTION 2 RUNOFF (EROSION/SEDIMENTATION) CONTROL PLAN PREPARATION

2.1 OVERVIEW

This section outlines a four-step process to develop a Runoff (also called an Erosion/Sedimentation) Control Plan, or ESCP:

1. Provide Project Information / Site Description

Information about proposed project activities and site characteristics is necessary to determine if and where runoff controls are needed. A detailed description of the site and proposed project activities will help the ASEP and the project developer/property owner to select and design appropriate runoff control measures to help minimize or prevent pollutant discharges via runoff.

Section 3 of this document contains a runoff control plan questionnaire, and guidelines to assist property owners/developers to provide the information necessary to assess potential runoff control needs.

2. Identify Sources of Runoff-Related Pollution

Identify project activities, facility operations, or site conditions that could result in the discharge of pollutants via storm water runoff. Identify the types and sources of pollutants associated with the activities of concern (e.g. sediment runoff from ground disturbance or soil stockpiles).

3. Develop Runoff Control Measures

Develop control measures appropriate to site operations, environmental conditions, to the activities of concern, and to the targeted pollutants. Control measures can include any program, technology, process, siting criteria, operating method, measure, or device which functions to minimize pollutant sources or to divert, retain, and treat storm water runoff.

4. **Develop a Monitoring and Maintenance Program**

Develop a written plan and schedule for conducting site inspections to monitor the condition and effectiveness of the control measures. This includes scheduled reviews of site operations and procedures, inspection of structural controls and site conditions, and observations of water quality in streams and near shore areas. The type and frequency of monitoring depends on the type of control measure implemented and on the incidence of storm events.

This four-step process provides a site- or project-oriented approach to ESCP development, which is appropriate for the property owner, individual developer, or facility manager. Each step is discussed in greater detail in the following sections.

2.2 **PROJECT INFORMATION / SITE DESCRIPTION**

Provide a written description of the project that includes developer/property owner information, proposed development activities, and site characteristics. Provide a graphic description of the project that includes a topographic map that shows site boundaries, existing features and proposed work, roads and access ways, existing vegetation, drainage flows, streams, other water bodies, distance to ocean, elevation contours, and other specific or unique site features. Provide information on land ownership if land is communal land, and include names and titles of persons who control the use and disposition of the land.

2.3 **POTENTIAL SOURCES OF POLLUTION**

Based on the project information provided, the ASEPA will help the developer/property owner identify sources of runoff pollution and then develop priorities for runoff control. Specific, heavily concentrated sources of pollutants, such as erosion discharges, are good first targets for control measures. Pollution sources, and opportunities for source and treatment controls, can be identified by looking at the following:

- **Proposed Activities**

Activities that may result in pollutant discharge, e.g. activities that involve ground disturbance (clearing, grading, soil tilling, etc.), material storage, stockpile and transfer, vehicle maintenance and fueling, waste disposal, confined animal facility, etc.

- **On-site Materials**
Materials used, stored, or produced on the site, and the likelihood of contact with runoff water; i.e., are the materials in a covered area, on a raised surface, protected by a berm, or in a drainage path? Also, is there potential for material spills, particularly spills involving chemicals or petroleum products that would be considered hazardous waste. The history of any prior spills should also be identified.
- **Work Procedures**
Daily work procedures that affect site conditions, and activities that may result in pollutant discharge.
- **Runoff Drainage Characteristics**
Storm water discharge and drainage flow characteristics reveal how pollutants are conveyed to the receiving waters, and indicate where opportunities exist to incorporate treatment control measures into the drainage system.

2.4 DEVELOPMENT OF BEST MANAGEMENT PRACTICES (BMPs)

Measures to control storm water pollution are known as Best Management Practices (BMPs). BMPs are defined as schedules of activities, prohibitions of practices, maintenance procedures, management practices, and structural controls that when used singly or in combination prevent or reduce the release of non-point source pollutants to territorial waters. A menu of Best Management Practices is presented in **Section 4** of this document. A BMP Application Checklist is provided in **Table 4-1** to assist in the selection of control measures.

Control measures are defined by the USEPA as:

“economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives.”

Runoff control measures can be generally categorized as source control measures and treatment control measures. Source control measures are designed to prevent potential pollutant sources from coming into contact with storm water. Treatment control measures are designed to treat polluted storm water flows before they discharge into territorial waters. It is generally more cost effective to prevent impacts by using source control than by using treatment measures to remove pollutants.

However, since source controls cannot prevent all impacts, some combination of measures will always be needed.

Control measures can be temporary or permanent depending on project requirements, operational requirements, and site characteristics. Both source control and treatment control measures can be made up of management controls, structural controls, and vegetative controls.

Management Controls

Management controls include:

- Scheduling activities during dry seasons;
- Spill prevention and response procedures;
- Inspections;
- Employee training; and,
- Record-keeping and internal reporting procedures

Management controls also include “Good House-Keeping” management policies to keep a clean and orderly facility or construction site. Routine cleaning and maintenance helps minimize or eliminate the potential release of oils, grease, paint, gasoline, concrete, solvents, litter, debris and sanitary waste into the water system. (Dodson 1995)

Structural Controls

Structural controls reduce pollutant discharges by diverting, detaining, reusing, or otherwise physically controlling storm water runoff to intercept pollutant discharges.

Vegetative Controls

Preserving existing vegetation and revegetating disturbed soil reduces erosion-related discharge through several different processes:

- Rainfall Protection - shielding the soil surface from the direct effects of raindrops;
- Flow Protection - disperses and decreases the velocity of surface flow;
- Infiltration - plant roots improve the soil's water storage porosity and capacity;
- Soil Retention - physically holds the soil in place with plant roots; and
- Transpiration - conducts moisture into plants, where it is eliminated by cellular processes and evaporation.

2.5 MAINTENANCE AND MONITORING

The BMP descriptions provided in Section 4 of this document provide basic guidance to maintain and monitor each specific control measure.

2.5.1 Maintenance

Inadequate maintenance is often cited as one of the major factors that influence the poor effectiveness of BMPs. The cost of long-term maintenance should be evaluated during the BMP selection process. In addition, responsibility for maintenance should be clearly assigned for the life of the system. Typical maintenance requirements include:

- Inspection of basins and ponds after every major storm for the first few months after construction and annually thereafter;
- Revegetation of eroded slopes and channels;
- Mowing of grass filter strips and swales at a frequency to prevent woody growth and promote dense vegetation;
- Removal of litter and debris from swales, sediment traps, and drainage ways;
- Frequent sweeping or jet-hosing of porous pavements or concrete grid pavements;
- Periodic removal and proper disposal of accumulated sediment to prevent premature failure due to clogging.

2.5.2 Monitoring

The effectiveness of runoff control measures should be evaluated through monitoring and visual inspections. An Erosion Sedimentation Control Plan should include a monitoring plan to ensure that the BMPs are effectively implemented and maintained. Regular visual inspections are necessary to ensure that all elements of the control plan are in place and are functioning properly. Monthly inspections are recommended during the first year of Control Plan implementation.

2.5.3 Sediment and Erosion Controls

In the case of sediment and erosion control BMPs, the monitoring programs should consist of regular inspection to determine the following (CSWQTF March 1993):

- Are the BMPs that are installed effective?
The effectiveness of the BMP should be based on the presence of silt behind or within control devices, the presence of silt downstream of the site, and signs of erosion in stabilized areas after a storm event. The system may be deemed ineffective if:

- ▶ Silt is present outside of control areas;
 - ▶ Structural controls are breached or fail under storm events of minor intensity;
 - ▶ Rills and gullies are present in stabilized slopes;
 - ▶ Evidence of silt buildup in downstream storm drains and drainage ways is apparent; and,
 - ▶ Controls are not maintained in accordance with design guidelines.
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- Have drainage patterns changed?
If the site has undergone significant grading operations, changing the drainage patterns, adjustments to the BMPs will likely be required to address the change.
 - Are sediment and erosion controls installed properly?
The BMPs should include details or references to allow for the proper construction of structural or vegetative erosions and sediment control devices. A visual inspection should be conducted to ensure that BMPs are installed as described in the ESCP.
 - Are areas stabilized as quickly as possible after completion of work activities?
Disturbed ground should be stabilized through the use of vegetation, mulch, or structural methods within 7 calendar days of the last work activity in the area.

2.5.4 Management Controls

In the case of management control BMPs, the monitoring programs should consist of regular inspection to determine the following:

- Looking for evidence of spills and resultant clean-up procedures (e.g., supplies of spill clean up materials)
- Examining integrity of containment structures;
- Note the location of an activity (e.g., outdoor/indoor, concrete/grass);
- Verify adequacy of waste containers;
- Verify waste disposal practices.

2.5.5 Record-Keeping

The monitoring plan should also include a record-keeping system to document:

- Scheduled inspections;
- Maintenance activities for control measures; and,
- Incidences of spills, leaks, and other discharges.