

## **SECTION 4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL**

This minimum control measure is a critical component of the stormwater management program because polluted stormwater runoff from construction sites often flows to storm sewer systems and ultimately is discharged into local rivers and streams. Sediment is typically the main pollutant of concern but other pollutants include solid and sanitary wastes, phosphorous (fertilizer), pesticides, nitrogen (fertilizer), oil and grease, concrete truck washout, construction chemicals and construction debris.

Sediment runoff rates from construction sites are typically greater than those of agricultural lands, and significantly greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites can cause physical, chemical, and biological harm to the state's waters.

### **4.1 REQUIREMENTS**

The development, implementation and enforcement of a program, or modification of an existing program, is required to reduce pollutants in any stormwater runoff to the Municipal Separate Storm Sewer System (MS4) from construction activities that result in a land disturbance of greater than or equal to one (1) acre. Reduction of stormwater discharges from construction activity disturbing less than one acre shall be included in the program if that construction activity is part of a larger common plan of development that would disturb one acre or more. The program shall include but not be limited to the following requirements:

- 4.1.1 An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions for non-compliance, to the extent allowable under State or local law.
- 4.1.2 Procedures for notifying construction site developers and operators of the requirements for registration under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities.
- 4.1.3 Requirements for construction site operators to implement appropriate erosion and sediment control best management practices in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control.
- 4.1.4 Requirements for construction site operators to control waste at the site such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality.
- 4.1.5 Procedures for site plan review, which incorporate consideration of potential water quality impacts.
- 4.1.5 Procedures for receipt and consideration of information submitted by the public.
- 4.1.6 Procedures for site inspection and enforcement of control measures.

Appropriate BMP's and measure goals for this minimum control measure must be determined. This must include the persons(s) or position(s) responsible and implementation dates for each BMP.

## 4.2 BEST MANAGEMENT PRACTICES

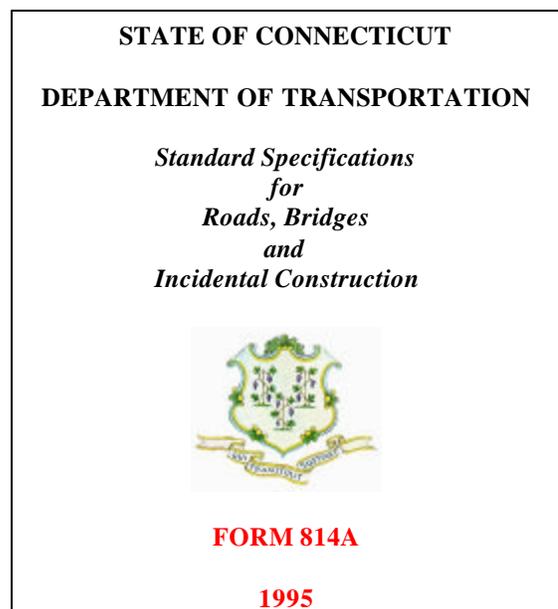
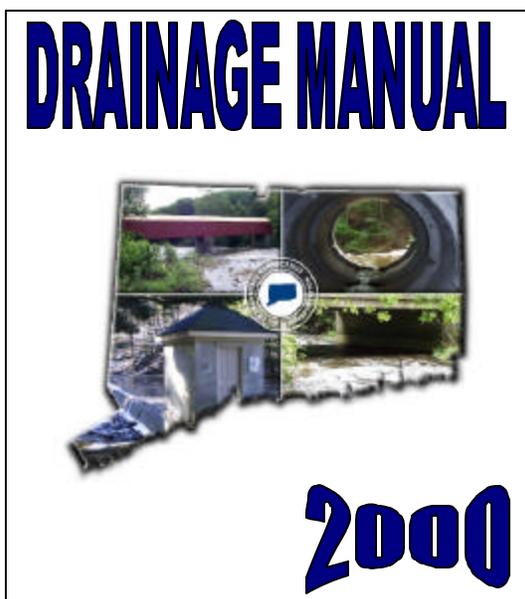
The following BMP's will be utilized in the implementation of the program to address the minimum control measure for Construction Site Runoff Control.

### 4.2.1 Requirements and Guidelines for Erosion and Sediment Controls

The department requires erosion and sediment controls for all projects in accordance with all state and federal regulations. Several documents are utilized for establishing guidelines and procedures for the use of erosion and sediment controls in planning, design and construction for state owned or state funded projects. These documents include the following:

- CTDOT Consultant Engineers Manual, March 1998 and supplements thereto
- CTDOT Drainage Manual, October 2000 and supplements thereto
- CTDOT Standard Specifications for Roads, Bridges, and Incidental Construction, Form 814A, 1995 and supplements thereto
- Connecticut Guidelines for Soil Erosion and Sediment Control, DEP Bulletin 34, 2002 and supplements thereto

*Examples of guidance, documents, design manuals and standard specifications utilized by the department relating to erosion and sediment control*



**CTDOT Consultant Engineers Manual**

Chapter 700, titled “Completion of Plans”, Section 718 of the Consultant Engineers Manual outlines requirements for sediment and erosion control plans. Chapter 800, titled “Environmental Activities” outlines various permit requirements which the department is subject to by state Statutes and federal regulations.

The manual also directly refers to the Connecticut Guidelines for Soil Erosion and Sediment Control requiring that erosion and sediment control plans be prepared in accordance with the guidelines.

**CTDOT Drainage Manual**

Erosion and sediment control is addressed in Chapter 8.5.4 of the department’s Drainage Manual. The design of outlet protection for all projects being designed or funded by the department shall be in accordance with the Drainage Manual versus the Connecticut Guidelines for Soil Erosion and Sediment Control. Outlet protection is discussed and the procedures for designing outlet protection are contained in chapter 11.13 of the Drainage Manual. The methodology outlined in the Drainage Manual has been accepted by the CTDEP for use by the department.

**CTDOT Standard Specifications for Roads, Bridges, and Incidental Construction, Form 814A**

The standard specifications directly refer to the Connecticut Guidelines for Soil Erosion and Sediment Control requiring that erosion and sedimentation control plans be prepared in accordance with the guidelines. This is outlined in Section 1.10, Environmental Compliance under Best Management Practices.

**Connecticut Guidelines for Soil Erosion and Sediment Control**

These guidelines are referenced by the department’s design manuals and made part of contracts by inclusion in the department’s standard specifications.

**Ordinances, Regulatory Mechanisms and Sanctions**

The department is not authorized by state statutes to impose sanctions for non-compliance with regard to erosion and sediment control. The department does have the authority to force corrective actions on behalf of the contractor to comply with appropriate regulations and controls. In case of failure by the contractor to perform pollution control work, the department shall arrange for the performance of required work by approved forces. The cost of such work shall be deducted from any monies due or which may become due to the contractor under the contract or under any State contract.

Appropriate measures shall be employed by the department to ensure compliance by contractors with sediment and erosion control plans for specific projects. The department shall notify and coordinate with the attorney general's office as required for compliance and sanction issues beyond the department's control.

Site specific BMP's to be utilized on projects may include the following:

**Runoff Control**

- Minimize Clearing
- Land Grading
- Permanent Diversions
- Preserving Natural Vegetation
- Construction Entrances
- Check Dams
- Filter Berms
- Grass Lined Channels
- RipRap

*Photograph of land grading activities with exposed soils*



*Photograph of hay mulch for temporary soil stabilization*



*Photograph of grass lined channel stone dike/check dam*



**Erosion Control**

- Mulching
- Permanent Seeding
- Sodding
- Soil Roughening
- Geotextiles
- Gradient Terraces
- Soil Retention
- Temporary Slope Drain
- Temporary Stream Crossings
- Vegetated Buffer
- Construction Sequencing
- Dust Control



*Photograph of Erosion Control Matting used for Slope Protection*

**Sediment Control**

- Temporary Diversion Dikes
- Brush Barriers
- Silt Fence
- Sediment Basins and Stone Check Dams
- Sediment Filters and Chambers
- Sediment Traps
- Storm Drain Inlet Protection



*Photograph of Sedimentation Control System*



*Photograph of Sediment Basin*

The measurable goals, target dates and responsible position associated with this BMP are detailed in the following table.

**Table 4.1 Requirements and Guidelines for Erosion and Sediment Controls BMP, Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1	Revise Consultant Engineer’s Manual, Drainage Manual and Standard Specifications to Implement 1 Acre Disturbance Threshold	Bureau Chief Arthur W. Gruhn
Year 2 - 5	Continue Requirements and Guidelines for Erosion and Sediment Controls on all Projects	Bureau Chief Arthur W. Gruhn

**4.2.2 Procedures for Notifying Construction Site Developers and Operators of Requirements for Registration**

All projects with land disturbance of greater than or equal to one (1) acre associated with construction activities shall be registered under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities with the CTDEP. Registration shall be submitted a minimum of thirty (30) days before the initiation of construction activities as required by the General Permit.

Section 804.09 of the Consultant Engineer’s Manual outlines the requirements associated with the General Permit. Construction activities as defined in the general permit include, but are not limited to, clearing, grubbing, grading, excavation, placement of fill and dewatering activities.

The measurable goals, target dates and responsible position associated with this BMP are detailed in the following table.

**Table 4.2 Procedures for Notifying Construction Site Developers and Operators of Requirements for Registration BMP, Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1	Implement Registration Requirements for all projects exceeding 1 acre threshold	Bureau Chief Arthur W. Gruhn
Year 2 - 5	Continue Compliance with Registration Requirements	Bureau Chief Arthur W. Gruhn

**4.2.3 Requirements for Construction Site Operators to Implement Appropriate Erosion and Sediment Control Best Management Practices**

Construction site operators are required to implement appropriate erosion and sediment control best management practices as outlined in contract plans, contract specifications and standard specifications. The department’s Standard Specifications

for Roads, Bridges and Incidental Construction, Form 814A outlines the environmental protection requirements in Section 1.10 Environmental Compliance, including sediment and erosion control, which a construction site operator or contractor for the department is bound to meet under the terms of its contract, and under federal and state laws and regulations.

The contractor is required at all times to conduct his operations in conformity with all Federal and State permit requirements concerning water, air, noise pollution and the disposal of contaminated, or hazardous materials.

The measurable goals, target dates and responsible position associated with this BMP are detailed in the following table.

**Table 4.3 Requirements for Construction Site Operators to Implement Appropriate Erosion and Sediment Control Best Management Practices BMP, Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1 - 5	Continue Requirements for Construction Site Operators to Implement Appropriate Erosion and Sediment Control Best Management Practices	Bureau Chief Arthur W. Gruhn

**4.2.4 Requirements for Construction Site Operators to Control Waste at the Site**

Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for stormwater runoff to mobilize construction site wastes and contaminate surface or ground water.

Construction site operators shall be required to control waste including discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site, that may cause adverse impacts to water quality.

The operators are required to control the above mentioned waste by contract specifications, the department’s standard specifications, Form 814A and all pertinent local, state and federal regulations.

The proper management and disposal of wastes must be practiced at any construction site to reduce contamination of stormwater runoff. Waste management practices can be used to properly locate refuse piles, to cover materials that may be displaced by rainfall or stormwater runoff, and to prevent spills and leaks from hazardous materials that were improperly stored.

The following are examples of steps that should be taken to ensure proper storage and disposal of construction site wastes:

**Waste Collection**

Designate a waste collection area onsite that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody.

- Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible.
- Schedule waste collection to prevent the containers from overflowing.
- Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package. Use an absorbent material such as sawdust or kitty litter to contain the spill. Handling and disposal of all hazardous material shall be in accordance with all state and federal regulations.
  
- During the demolition phase of construction, provide extra containers and schedule more frequent pickups.
- Collect, remove, and dispose of all construction site wastes at authorized disposal areas. The CTDEP can be contacted to identify these disposal sites.

**Contaminated / Hazardous Materials**

Materials will be disposed of by the department as solid waste in accordance with the Standard Specifications, contract specifications and all applicable federal, state, and local regulations. Contract specifications for the excavation, transporting, stock piling, securing, disposal of contaminated / hazardous materials and decontamination of equipment will include but not limited to the following:

- Environmental Health and Safety
- Contaminated / Hazardous Materials Excavation
- Securing, Construction and Dismantling of a Waste Stockpile and Treatment Area
- Disposal of Hazardous Waste
- Environmental Work – Solidification
- Disposal of Contaminated Railroad Ties
- Controlled Materials Handling
- Disposal of Contaminated Timber Piles
- Disposal of Controlled Materials
- Management of Reusable Controlled material
- Abandonment of Wells
- Handling and Disposal of Contaminated Concrete
- Handling Contaminated Groundwater

### **Pesticides**

The following practices should be used to reduce risks associated with pesticides or to reduce the amount of pesticides that come in contact with stormwater:

- Follow all federal, state, and local regulations that apply to the use, handling, or disposal of pesticides.
- Do not handle the materials any more than necessary.
- Store pesticides in a dry, covered area.
- Construct curbs or dikes to contain pesticides in case of spillage.
- Follow the recommended application rates and methods.
- Have equipment and absorbent materials available in areas where pesticides are stored and used in order to contain and clean up any spills that occur.

### **Petroleum**

The following management practices should be followed to reduce the contamination risk associated with petroleum products:

- Store petroleum products and fuel for vehicles in covered areas with dikes in place to contain any spills.
- Immediately contain and clean up any spills with absorbent materials.
- Have equipment available in fuel storage areas and in vehicles to contain and clean up any spills that occur.

### **Fertilizers**

Phosphorous- and nitrogen-containing fertilizers are used on construction sites to provide nutrients necessary for plant growth, and phosphorous- and nitrogen-containing detergents are found in wash water from vehicle cleaning areas. Excesses of these nutrients can be a major source of water pollution. Management practices to reduce risks of nutrient pollution may include the following:

- Apply fertilizers at the minimum rate and to the minimum area needed.
- Work the fertilizer deeply into the soil to reduce exposure of nutrients to stormwater runoff.
- Ensure that erosion and sediment controls are in place to prevent fertilizers and sediments from being transported off-site.
- Use detergents only as recommended, and limit their use onsite. Wash water containing detergents should not be dumped into the storm drain system—it should be directed to a sanitary sewer or be otherwise contained so that it can be treated at a wastewater treatment plant.
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**Maintenance Considerations**

Containers or equipment that may malfunction and cause leaks or spills should be identified through regular inspection of storage and use areas. Equipment and containers should be inspected regularly for leaks, corrosion, support or foundation failure, or any other signs of deterioration and should be tested for soundness. Any found to be defective should be repaired or replaced immediately.

The measurable goals, target dates and responsible position associated with this BMP are detailed in the following table.

**Table 4.4 Requirements for Construction Site Operators to Control Waste at the Site BMP, Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1 - 5	Continue Requirements for Construction Site Operators to Control Waste at the Site	Bureau Chief Arthur W. Gruhn

**4.2.5 Procedures for Site Plan Review**

Procedures for site plan review which incorporate consideration of potential water quality impacts are utilized by the department. Construction plans and specifications are reviewed by the department’s Environmental Planning unit for conformance to the department’s requirements and federal and state permit requirements relating to construction site runoff control.

Projects requiring registration under the General Permit for the Discharge of Stormwater Associated with Construction Activities shall include site plans along with the permit application and a site specific stormwater pollution control plan for review and registration by the CTDEP.

**Table 4.5 Site Plan Review BMP, Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1 - 5	Continue Site Plan Review Procedures	Bureau Chief Arthur W. Gruhn

**4.2.6 Procedures for Receipt and Consideration of Information Submitted by the Public**

Procedures for receipt and consideration of information submitted by the public are utilized by the department. Information submitted by the public is forwarded to the appropriate unit within the department for consideration. Information related to construction site runoff is forwarded to and considered by the Environmental Planning unit.

**Table 4.6 Procedures for Receipt and Consideration of Information Submitted by the Public BMP, Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1 - 5	Continue Procedures for Receipt and Consideration of Information Submitted by the Public	Bureau Chief Arthur W. Gruhn

**4.2.7 Procedures for Site Inspection and Enforcement of Control Measures**

Site inspection and enforcement of control measures are utilized on all of the department’s projects.

Inspectors employed by the department are authorized to inspect all work performed and materials furnished for each project. The inspection may extend to all or any part of the work, and to the preparation or manufacture of the materials to be used including work and materials relating to construction site runoff control.

Additional inspection is also provided by the Environmental Planning unit and the District construction offices.

The measurable goals, target dates and responsible position associated with this BMP are detailed in the following table.

**Table 4.7 Site Inspection and Enforcement of Control Measures BMP Measurable Goals and Implementation Dates**

Target Date	Activity	Position Responsible
Year 1 - 5	Continue Site Inspection and Enforcement of Control Measures	Bureau Chief Arthur W. Gruhn