



A GENERAL GUIDE TO

EROSION & SEDIMENT CONTROL (ESC) ON SMALL CONSTRUCTION SITES

By-law Overview

Soil erosion on construction sites can be a major source of water pollution in the City's drainage system, having a considerable impact on the system's capacity to function and a significant detrimental impact on creeks and stream.

The City's Erosion and Sediment Control By-law requires all construction sites within Surrey to ensure that the construction site is managed to prevent soil becoming a stormwater pollutant. Under the by-law, the allowable pollutant level is 75 mg/litre Total Suspended Solids (TSS), but what does this mean for the management of your construction site?

The ESC By-law requires construction sites under 2000 m² to implement compulsory measures to limit soil becoming a stormwater pollutant. These requirements are specified under Schedule B of the by-law and are also listed as a condition on all Building Permits issued by the City; failure to abide by this by-law can impact the status of your Building Permit.

This guide provides a brief overview of the issues and how you can deal with this issue on your site to ensure that you comply with the regulations.

For further information about the ESC By-law please refer to the *General Guide to the Erosion and Sediment Control By-law* which is part of this information series.

November 2009

Engineering Department
City of Surrey

This guide provides an overview of what is required under the ESC By-law on small construction sites.

Does this apply to your project?

If you are proposing to undertake any construction that results in a disturbed area of less than 2000 m² then this guide applies to your site.

What's Inside

Understanding the Issue
Appropriate Site Management
Due Diligence & Compliance



This single family construction site shows no ESC management on-site. Perimeter controls, surface protection, a gravel access pad and regular road sweeping should be implemented to prevent stormwater pollution.



The above demonstrates inappropriate stockpile handling, and dirt accumulated on the road from construction sites with no BMP's. The accumulated dirt is then tracked further by site traffic.



This image shows poor placement of an uncovered stockpile, no site perimeter controls, no surface erosion protection and dirt accumulated on the road and gutter.



The site shows significant soil migration from the work area onto the road. No BMP's are present on this site and the road drainage is located under the material in front of the stockpile located in the middle of the image.

Understanding the Issue

The first step to understanding erosion and sediment control on a construction site is to understand the nature of the problem.

Construction inherently results in the disturbance of the existing ground cover, exposing the underlying soil to the elements of wind and rain, facilitating erosion. However, this is only one part of the issue as site handling can significantly contribute to soil becoming a stormwater pollutant. For example, stockpile handling and soil placement or the indirect transport of soil on machinery onto roads can extend the zone of negative influence well beyond the construction site boundaries.

Water erosion begins with the impact of each rain drop on exposed soils, dislodging and moving soil at the particle level. As the water accumulates and begins to move, it gathers volume and momentum, carrying more and more soil with it to the drainage system.

There are three core areas that can be addressed on the construction site to ensure that soil doesn't become a stormwater pollutant.

- **Erosion Control**
Preventing water's contamination by soil
- **Stormwater Control**
Managing water movement on the site to minimise contamination
- **Sediment Control**
Removing the sediment from contaminated water

The information contained within this guide will help familiarise you with what you should be implementing on your sites to stay in compliance.



Appropriate Site Management

Erosion control is important from the commencement of construction and often begins before the first spade hits the soil. Before you get started, look at the key areas of your site and plan what steps are needed. Forward planning is cheaper and more effective in the long run.

- Control site access by preventing vehicle access to exposed soils
- Provide gravel access pads for vehicle access
- Implement perimeter control measures to contain soil and provide stormwater treatment
- Cover exposed soils using straw to prevent impact erosion from rain
- Keep the roads clean at all times
- Install catchbasin protection
- Cover stockpiles
- Keep sediment material off paved surfaces

Keep in mind that erosion control needs to be adaptive to suit the progression of construction on the site. Looking ahead to adapt the way the site is managed can make compliance with the by-law second nature.



The above single family construction site shows a complete approach to site ESC management. There are perimeter controls, surface protection using straw, CB protection and the paved surfaces are clean.



This angle of the same construction site shows that the builder has installed a gravel access pad for managed site access. The installed perimeter controls further act to restrict vehicles to this site access point, which that helps to keep the roads clean.

Due Diligence & Compliance

The By-law requires owners and builders overseeing construction projects to demonstrate that they have exhibited due diligence in complying with the measures outlined under this by-law. The requirements of this by-law are based on accepted industry best practise and are not new to the construction industry. However, due to poor historical adoption of these measures, greater enforcement is required to limit the deferred costs to the greater community from non-compliance.

If an owner and/or builder can demonstrate that they have applied the Best Management Practices (BMP's) required under "Schedule B" to all stages of their construction site, then they are deemed in compliance with the provisions of the by-law. If a site hasn't implemented these requirements and a neighbouring construction site impacts the storm system or adjacent roadway, then both sites will be deemed responsible parties.

The key to staying in compliance with the by-law is to ensure that your site has correctly installed Best Management Practises (BMP's) and that they are inspected and maintained regularly during construction.

Frequently Asked Questions

Isn't Catchbasin protection alone adequate?

No, catchbasin protection is only able to target the larger suspended solids and often can't deal with the volume of water. Using these devices alone will not address the problem and will not achieve compliance with the By-law.

Doesn't this add a large cost to my project?

No, done correctly applying ESC measures to your construction site will add between 1 to 2% to the overall construction cost. Many benefits come from doing ESC on the site including better working conditions, wet weather access, less site maintenance/clean up, curb appeal to buyers. Not doing ESC on the other hand could result in site closures, fines, or cost deferral to the owner to clean the drainage system.

Who is responsible under the By-law?

The Property Owner and/or Builder are ultimately accountable regarding the implementation and management of ESC works on the construction site, and compliance with this by-law.

What is considered disturbed area?

The disturbed area referred to within the by-law relates to any area that has the potential to cause the release of sediment or sediment-laden water from the construction project and includes all areas that are impacted by the associated works. This means that when applying this By-law, the City will calculate the total disturbed area including but not limited to, access roads, areas impacted by site traffic, staging areas, stockpiles, work areas around buildings, and cleared/proposed and landscape areas.

Why is erosion and sediment control on construction sites important to the City?

Sediment-laden stormwater that drains from construction sites into the City's drainage system has a considerable impact on storm drains, creeks and streams. An estimated four truckloads of sediment resulting from erosion is discharged off a residential construction site during a single rainfall event.

Each year the City has to remove the build-up of the sediment that settles in the drainage network at a considerable cost to residents. This material reduces the capacity of the system to function during storms, potentially causing flooding.

Sediment-laden stormwater also has a detrimental impact on the condition of the creeks and streams that support aquatic life, such as salmon eggs and fry. All these impacts occur at a cost to the greater community. The City is ensuring that proactive measures are taken to manage the problem at its source.

For more information

Printed in Canada on Recycled Paper

City of Surrey
Engineering Department
Front Counter
14245 - 56 Avenue
Surrey, BC V3X 3A2

Monday - Friday | 8:30am-4:30pm
Tel | 604.598.5748
Fax | 604.591.8693
Email | escbylaw@surrey.ca
Website | www.surrey.ca/esc

This information is for general guidance only. It does not replace by-laws or other legal documents.