

# Erosion and Sediment Control (ESC) Bylaw: Responsibilities of the ESC Supervisor

July 2010

The use of best management practices (BMP's) to control erosion and sediment on construction sites is intended to reduce, and if possible, eliminate the export of sediment-laden water into the City's drainage system. In order for erosion and sediment controls to be effective they need to be appropriately designed, implemented, inspected and maintained. Poor BMP performance or failure not only stems from design considerations, but is more frequently a result of poor installation, inspection, and maintenance practices.

As part of the ESC Bylaw, sites that require an ESC Submission are obligated to implement an inspection and maintenance program to ensure that planned ESC facilities can meet the design and treatment performance requirements. In addition, ESC monitoring on all sites will ensure equal standards are applied and that problems can be identified and addressed within appropriate time frames to limit damage to the City's drainage system.

The requirements outlined in this document are intended to assist ESC Supervisors with site assessment activities to ensure the requirements of the Bylaw are achieved. It is the ultimate responsibility of the developer/property owner to ensure that the site is in compliance with the Bylaw.

## Drainage System means:

"Any natural system, or designed, constructed or installed system for the express purpose of containing or conveying drainage to an outlet destination, whether such system is located on public lands, protected by registered statutory rights-of-way, in place historically, or previously approved by the City and includes, without limitation, storm sewer mains, ditches, swales, creeks, ravines conveying or capable of conveying drainage or runoff, watercourses, detention and infiltration systems."

## ESC Supervisor Qualifications

The ESC Supervisor is defined by the Bylaw as "a *Qualified Professional who is experienced in designing and implementing ESC Plans and who is responsible for inspecting, maintaining, monitoring and reporting on the ESC Facilities constructed and installed pursuant to an ESC Plan*", where a "Qualified Professional" means an individual, whether acting alone or together with another Qualified Professional, who:

- (a) is registered and in good standing with one or more of the following professional organizations: Association of Professional Engineers and Geoscientists; Association of BC Forest Professionals; College of Applied Biology; Applied Science Technologists and Technicians of BC; BC Institute of Agrologists; EnviroCert International (Certified Professional in Erosion and Sediment Control); or BC Society of Landscape Architects;
- (b) is acting under that organization's code of ethics and subject to disciplinary action by that organization;
- (c) has an area of expertise that is generally recognized in the field of Erosion and Sediment Control as one that is acceptable for the purpose of providing all or part of the design and monitoring of ESC Facilities in respect of a Development proposal; and
- (d) is acting within their area of expertise."



While the ESC Supervisor is the primary person responsible for site inspections, monitoring and reporting, a **suitably qualified individual** acting under the direction of the ESC Supervisor can conduct the site monitoring and inspection. The ESC Supervisor must, however, sign off on all correspondence with the City of Abbotsford and be ultimately responsible to identify and address ESC issues as they arise.

Individuals without the CPESC designation are strongly encouraged to complete training in erosion and sediment control to demonstrate their competency in this field. Training courses are available locally through the Vancouver Island University (<http://www.viu.ca/nrep/programs.asp>) and the University of Washington College of Engineering's Engineering Professional Programs (<http://www.engr.washington.edu/epp/cee/cec.html>).

## ESC Supervisor Responsibilities

This document specifies the monitoring and reporting requirements for sites requiring ESC Submissions under the ESC Bylaw. The primary duties of the ESC Supervisor are:

- preparing the ESC Plan in accordance with the requirements specified in Section 8(b) (see Appendix A);
- attending the pre-construction meeting held with the City of Abbotsford;
- inspecting, maintaining, monitoring and reporting on the ESC Facilities, as per Section 9(2)(a), which may include:
  - Monitoring/inspecting the site to ensure ESC facilities are implemented according to the ESC Plan, particularly at the commencement of clearing, grubbing and grading;
  - Liaising with the clearing and grubbing contractor to sign off on ESC measures prior to leaving the site;
  - Conducting site inspections of the overall site discharge, common property (i.e. roadways, catch basins, park boundaries, drainage measures etc), and undeveloped lots still owned by the Permit holder, as needed in accordance with this document and on-site construction scheduling to ensure measures are implemented and maintained appropriately;
  - Monitoring the turbidity of the water leaving the site;
  - Advising the Owner and/or Contractor of any ESC deficiencies or actions required to be implemented to adapt to changing site conditions or unforeseen problems that arise regarding erosion and sediment control;
  - Ordering the suspension of Development based on pending or existing weather conditions or based on unusual, unacceptable or inappropriate construction practices; and
  - Coordinating the removal of ESC measures with site operations;
- maintaining a logbook of all inspections, as per Section 9(2)(b) and making the logbook available to the City upon request, as per Section 9(2)(c);
- delivering written notice to the City's assigned Works Inspector or Building Inspector (whichever is applicable) and Development Technologist that all Development at the site is completed, the site is stable and under control and no longer poses a threat to the Drainage System and the ESC Facilities may now be safely removed, as per Section 8(c); and
- immediately notifying the City of a contract termination, as per the ESC Supervisor Letter of Appointment (see Appendix B).

It is the sole responsibility of the Developer<sup>1</sup> under Section 8(3) of the Bylaw to ensure that all ESC Facilities are constructed, implemented, installed and maintained appropriately, and that site discharge limits are in accordance with the limits specified in Section 4 of the Bylaw.

<sup>1</sup> "Developer" means an owner or owners of land or the holder(s) of a bona fide interim agreement or option to purchase land, or an applicant who applied to the City for, or is engaged in undertaking the Development of such land, and shall include their duly authorized representative.

On multi lot subdivisions where lot ownership is transferred to the homebuilder, the owners/homebuilders are responsible to implement appropriate BMPs on their lots in accordance with the City document “*Erosion and Sediment Control (ESC) Bylaw: Best Management Practices*” and they must abide by the site discharge limits specified in Section 4 of the Bylaw.

## Monitoring and Inspection

The ESC Bylaw requires permitted sites to undertake regular site inspections and monitoring. The installation of erosion and sediment control BMP facilities alone isn’t sufficient to meet the requirements of the permit. To ensure that prescribed BMP’s remain effective, regular inspections and maintenance must be conducted during construction, post construction maintenance periods, and through to the end of development. Site monitoring should incorporate daily visual checks by the ESC Supervisor or their appropriately qualified designate. Site inspections should target critical areas on and off the site and should include:

- All disturbed areas
- Soil stockpiles
- Vehicle entry/exit points
- All erosion and sediment control facilities
- Storm water conveyance measures
- Points of storm water discharge from the site (overland and piped flows), and
- Receiving waters within 50m of the site.

Between the specified monitoring periods, it is the responsibility of contractors on site to avoid interfering with ESC devices and facilities, and repair them as required. The ESC Supervisor or designate should conduct routine visual checks to ensure that the specified facilities outlined in the ESC Plan are installed as specified and functioning accordingly. BMP’s must be in good working condition until the upslope area they manage is sufficiently stabilized so that the control measures are no longer required to protect the downslope drainage system.

### Inspection Frequency

The minimum inspection and reporting requirements for active sites is at least once every week and within 24hrs following a significant rainfall event<sup>2</sup>. Although the Bylaw requires post event monitoring after a significant rainfall event, spot checks should be conducted during these events to evaluate BMP performance under storm flow conditions when the likelihood of deficiencies are more prevalent. Rainfall information is available on the City’s Rainfall Information website (see link under [www.abbotsford.ca/ESC](http://www.abbotsford.ca/ESC)).

### Seasonal variation

During extended dry periods over the summer, generally from May to September, inspection frequencies can be reduced to monthly intervals, as well as within 24hrs following a significant rainfall event.

### Inactive sites

Site inspections and reporting can be reduced to bi-weekly intervals or longer upon agreement with the City and the ESC Supervisor, as long as (1) the period of inactivity on site is greater than 14 days, (2) adequate treatment measures are in place, and (3) previous site performance has been good. Any reduction in inspection frequencies as a result of inactivity onsite will require that all BMP’s specified under the sites ESC Plan are appropriately installed, adequately maintained, and sufficient to render the site protected. Prior to the reduction in monitoring frequency, the ESC

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<sup>2</sup> “Significant Rainfall Event” means any precipitation event, which meets or exceeds the intensity of 25mm/day.

Supervisor is required to undertake a detailed inspection and sign off on the sites ESC protection level. Site monitoring after significant rainfall events is still required.

### **Residential Subdivision Phasing**

Inspection frequencies of Permitted sites where lots under 2000m<sup>2</sup> are created can be reduced to bi-weekly intervals or longer upon agreement with the City and the ESC Supervisor, as long as (1) adequate treatment measures are in place, and (2) previous site performance has been good. Proposed inspection frequencies should take into consideration weather conditions, season, remaining ESC measures on site, site conditions and the Permit holder's duty of care. Monitoring during or after significant rainfall events is still required.

## **Monitoring Parameters and Locations**

### **Turbidity (NTU's)**

Water turbidity will be used as an in-situ indicator for the level of sediment concentration within site storm water discharge. As per Section 4(2) of the Bylaw, no person shall discharge or cause, suffer or permit the discharge into the Drainage System, either directly or indirectly, of water which has a Turbidity level greater than 25 NTUs or which exceeds the Turbidity limits set by Fisheries and Oceans Canada, whichever is the most restrictive. Where a Significant Rainfall Event has occurred within the preceding 24 hours, water with a Turbidity level greater than 25 NTU may be discharged into the Drainage System during a 24-hour grace period provided that no discharge into the Drainage System may exceed 100 NTU (this applies only to sites with an ESC Supervisor). Water turbidity must be recorded in the logbook during every site inspection.

### **Receiving Waters**

All receiving waters should be monitored for signs of impact from storm water discharge from the construction site. Changes in the streambed or any accumulations of sediment deltas or banks should be noted and reported. For ease of reference and record, photographs should be taken of the prior stream condition (for comparison purposes) and at regular intervals to determine if any changes in stream condition have occurred as a result of construction activities. The photographs should be taken at the same focal point, scale and angle to assist comparison.

### **ESC Facilities: Installation and Condition**

The ESC Supervisor is required to conduct visual inspections to ensure that all ESC measures are installed in accordance with the approved ESC Plan in a timely manner. The inspections should identify any installation deficiencies that could impair the BMP's performance and notify the Site Supervisor/Permit Holder to remedy the deficiency.

### **ESC Facilities: Maintenance and Performance**

It is the responsibility of the ESC Supervisor to identify any maintenance issues that need addressing whereby the efficiency of the BMP is likely to be compromised during the next rain event. Likewise it is up to the discretion of the ESC Supervisor to evaluate whether or not the installed ESC facilities are capable of meeting the ESC requirements of the Permit and ensure that measures are undertaken to mitigate any potential deficiencies in the ESC Plan.

### **Monitoring Equipment**

Scientific equipment utilized for the monitoring of in-situ turbidity to be conducted using meters that generate a digital read out. The testing of discharge turbidity is to be undertaken using a hand held meter with a manufacturer's specified range that includes 25 and 100 NTU and a minimum 2 point calibration, or samples should be taken in a laboratory supplied and prepared sample container and delivered to an independent CALA (Canadian Association for Laboratory Accreditation) accredited laboratory for turbidity measurement. The use of a Triton Turbidity Wedge or Secchi Disk is not sufficient to meet the monitoring requirements specified under the Bylaw. Calibration history should be recorded and made available to the City upon request.



### **Discharge Sampling Locations**

Appropriate sampling locations for assessing site performance should be stipulated in the approved ESC Plan. Monitoring points should appropriately reflect site discharge at the downstream boundary of the site and be independent of pre-existing watercourses. Should this not be possible, upstream water quality conditions should be included in the monitoring process as a point of reference for water quality conditions downstream of the discharge location. Every effort should be taken to limit the influence of dilution of site discharge in order to avoid biasing the site's performance (note: the City does not recognize compliance based on utilizing the initial dilution zone). Should the primary point of discharge be piped flow or there is a potential for storm water flows conveyed off-site as piped flow, then efforts should be undertaken to sample and monitor flows as they leave the site. Should the piped flows be influenced from up-stream catchments then a reference point where the pipe flow enters the site should also be sample to identify background levels. Should flocculants be used on site as part of the ESC treatment train, then a suitable site immediately downstream should be available to monitor the effectiveness of the treatment measure and chemical loading. Flocculant treated stormwater must undergo appropriate filtration prior to discharging from the site and must be monitored.

### **Remediation and Problem Resolution**

Any damage or deficiencies identified through site inspections and monitoring are to be mitigated as soon as practical after the inspection but in no case later than 7 days after the inspection. Should the identified deficiency result in significant risk or damage to the receiving drainage system then immediate action should be instigated to rectify the deficiency to an acceptable level until the issue can be safely addressed and the site brought back into compliance.

### **Reporting**

The ESC Supervisor is responsible for keeping an up-to-date logbook of all site inspections, maintenance/installation deficiencies, and remedial recommendations made to the Site Supervisor or Permit Holder. The ESC supervisor must provide the logbook to the City, if requested, at any time during Development or the Maintenance Period. Failure to provide a logbook, or failure to keep an up-to-date logbook, may result in one or more of the penalties outlined in the Bylaw. An Inspection Report must be completed and submitted to the Site Supervisor or Permit Holder within 24 hours of the site visit.

### **Logbook/Inspection Report Requirements**

Reports should include the following detail:

- Date and time of inspection
- Project location and Permit number
- ESC Supervisor contact information
- Details on who conducted the inspection if different from the ESC Supervisor
- Weather Conditions at time of inspection, rainfall totals last 7 days and 24hrs
- Stage of Construction (i.e. bulk earthworks, utility installation, building construction, etc)
- General site conditions
- Inspection details pertaining to ESC facilities; addressing installation, maintenance, condition, performance
- Remedial actions required, including time frames for the completion of specified works
- Remedial actions outstanding from previous inspections
- Site discharge monitoring parameters including the model of turbidimeter used
- Map of problem areas, areas undergoing active erosion, monitoring locations
- Details on who received the report (i.e. Site personnel/Supervisor)
- Sign off by the ESC Supervisor.

Refer to Appendix C for an example of a typical inspection report.



## Site Investigations and Bylaw Enforcement

Designated staff from the City may enter a site in order to carry out random site inspections and collect field samples to validate reports submitted to the City and compliance with the Bylaw. Any course of action pertaining to the enforcement of violations committed under the ESC Bylaw will take into consideration the responsible parties that contributed to the breach and will result in notices to comply or ticketing. The holder of a Permit is ultimately held accountable for the conformance of the site under the Bylaw while the Permit is active. It is their responsibility to ensure that due diligence is employed to prevent the release of sediment-laden water into the City's drainage system.

### For more information

The staff in the Community Sustainability Division are happy to assist and help you comply with these guidelines. If you have any questions, please contact us at:

City of Abbotsford  
Economic Development and Planning Services  
Community Sustainability Division  
32315 South Fraser Way  
Abbotsford, BC V2T 1W7

Tel: 604-864-5510  
Email: [env-info@abbotsford.ca](mailto:env-info@abbotsford.ca)  
[www.abbotsford.ca/ESC](http://www.abbotsford.ca/ESC)

Or contact an Environmental Coordinator directly:

Rod Shead, Environmental Coordinator  
[rshead@abbotsford.ca](mailto:rshead@abbotsford.ca)  
Tel: 604-851-4174

Tanya Bettles, Environmental Coordinator  
[tbettles@abbotsford.ca](mailto:tbettles@abbotsford.ca)  
Tel: 604-851-4186

Pauline Favero, Environmental Coordinator  
[pfavero@abbotsford.ca](mailto:pfavero@abbotsford.ca)  
Tel: 604-851-4173



APPENDIX A:  
ESC PLAN REQUIREMENTS



As per Section 8(2), every ESC Plan shall:

- (a) be prepared by an ESC Supervisor;
- (b) consist of a multi-stage plan that conforms to the City's CAD Drawing format and shows the measures for ESC during the following phases (where applicable):
  - (i) land clearing, grubbing and grading;
  - (ii) the installation of services or infrastructure;
  - (iii) the building construction; and
  - (iv) the Warranty Period, and
- (c) include the following information:
  - (i) proposed measures to address the erosion and sediment control requirements for clearing limits, cover measures, perimeter protection, traffic area stabilization (including detailed design of any necessary wheel washes), Sediment retention, surface water control and dust control, with source controls being the primary method of erosion and sediment control;
  - (ii) location(s) of limits of disturbance for each of the phases of Development;
  - (iii) the location of all proposed ESC Facilities to be implemented on site, including site access locations, Sediment ponds and any necessary wheel wash facilities;
  - (iv) for each ESC Facility, the design and installation specifications and maintenance requirements;
  - (v) for ESC Plans utilizing Treatment Chemicals, technical specifications including ecological toxicity data from the Treatment Chemical manufacturer;
  - (vi) the proposed methods to restore disturbed areas following the completion of Development;
  - (vii) all other details pertaining to the proposed Development, describing how the ESC Facilities will meet the water quality requirements and Turbidity levels established under this Bylaw;
  - (viii) locations of property line(s) and other legal designations of the subject property or properties;
  - (ix) location(s) of existing underground services, as well as any proposed connections to existing services from the site;
  - (x) location(s) of existing drainage infrastructure and the proposed measures to protect it;
  - (xi) location(s) of existing and proposed watercourses, ditches, swales or other bodies of water within 50m of the site boundaries, along with the proposed protection measures;
  - (xii) location(s) of existing and proposed buildings, including residential buildings or ancillary buildings or structures; and
  - (xiii) existing and proposed contours and relevant spot elevations.



APPENDIX B:  
ESC SUPERVISOR LETTER OF APPOINTMENT





# ESC SUPERVISOR LETTER OF APPOINTMENT

**TO: Economic Development and Planning Services Department**

**DATE:** \_\_\_\_\_

**RE: Address of Project:** \_\_\_\_\_

**Legal Description of Property:** \_\_\_\_\_

I \_\_\_\_\_, confirm that I have been retained  
(ESC Supervisor's name)

by \_\_\_\_\_ for the project at the property noted above.  
(Owner/Agent)

I am qualified to be an ESC Supervisor, since I:

- (e) am registered and in good standing with one or more of the following professional organizations: Association of Professional Engineers and Geoscientists; Association of BC Forest Professionals; College of Applied Biology; Applied Science Technologists and Technicians of BC; BC Institute of Agrologists; EnviroCert International (Certified Professional in Erosion and Sediment Control); or BC Society of Landscape Architects;
- (f) am acting under that organization's code of ethics and subject to disciplinary action by that organization;
- (g) have an area of expertise that is generally recognized in the field of Erosion and Sediment Control as one that is acceptable for the purpose of providing all or part of the design and monitoring of ESC Facilities in respect of a Development proposal; and
- (h) am acting within my area of expertise.

I am responsible for inspecting, maintaining, monitoring, and reporting on the Erosion and Sediment Control facilities for the development occurring on the above property, in accordance with the requirements of the City of Abbotsford's Erosion and Sediment Control Bylaw No. 1989-2010.

I also acknowledge the responsibility to notify the City of Abbotsford of the date I cease to be retained by the Owner and/or Agent.

<b>ESC Supervisor:</b>		<b>Professional Seal</b>
Signature:		
Company:		
Address:		
Tel:		
Email:		

APPENDIX C:  
EROSION AND SEDIMENT CONTROL  
INSPECTION REPORT



# Erosion and Sediment Control Site Inspection Report

**Notice:** Use of this specific form is voluntary, but the information contained on this form must be collected and kept by the permittee. Inspections of implemented erosion and sediment control best management practices must be performed weekly and within 24 hours after a precipitation event 25mm per day or greater. Weekly written reports of all inspections conducted by or for the permittee must be maintained throughout the development process. The information collected must be submitted to the City upon request.

Project Location: \_\_\_\_\_  
 ESC Supervisor: \_\_\_\_\_ Contact #: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Inspected by: \_\_\_\_\_ Position Title: \_\_\_\_\_  
 (if different from ECS Supervisor)  
 Attendees: \_\_\_\_\_

Weather Conditions: During Inspection: \_\_\_\_\_ Forecast: \_\_\_\_\_  
 Rainfall total: Last 7 days: \_\_\_\_\_mm Last 24hrs: \_\_\_\_\_mm

Date: \_\_\_\_\_(dd/mm/yy)  
 Time: Start: \_\_\_\_\_ End: \_\_\_\_\_  
 Permit #: \_\_\_\_\_

Stage of Construction:

Clearing & grubbing  Final grading   
 Rough grading  Building const.   
 Utility Installation  Landscaping   
 Period of Construction Inactivity

Type of Inspection:

Regular:  Significant Rainfall Event:

	As per ESC Plan? (Y/N)	Modifications Required? (Y/N)	Specific Location	Description of Remedial Action Required (Specify time period for action and if this is a repeated request for action)
Are off-site/down stream properties/waterways affected by any site runoff?				
Are perimeter controls in place and functioning adequately?				
Is vegetation disturbance limited to necessary areas?				
Has all sediment-laden storm water originating on site been treated prior to discharge?				
<b>Erosion Control Measures</b> (i.e. stockpile protection, vehicle restriction, disturbed area surface protection, slope texturing, etc)				
Specify:-				

	As per ESC Plan? (Y/N)	Modifications Required? (Y/N)	Comments	Remedial Action Required (Specify time period for action and if this is a repeated request for action)
<b>Storm Water Conveyance Measures</b> (i.e. swales, ditches, check dams, slope drains, etc)				
<i>Specify:-</i>				
<b>Sediment Control Measures</b> (i.e. sediment/filter fences, inlet protection, site access facility (gravel pad, wheel wash etc), sediment basins/traps, etc)				
<i>Specify:-</i>				
Sediment basins/traps <ul style="list-style-type: none"> <li>- Inlet/outlet structures</li> <li>- Baffles</li> <li>- Exterior fence</li> <li>- Side wall stability</li> <li>- Flocculent application</li> </ul>				

Monitoring location*	Turbidity In-Situ (NTU)

\*monitoring locations may include the following locations: sediment pond outlet, upstream of site, downstream of site, outlet of swale, etc

NTU meter used: \_\_\_\_\_

**Attach site map and photos showing:** ESC measures, devices requiring maintenance, critical areas without protection, areas undergoing rill and gully erosion, and monitoring locations.

Inspector's Signature: \_\_\_\_\_

Site Supervisor/Permit Holder Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Copies Forwarded to: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_