

Ministry of the Environment**Soil Management – A Guide for Best Management Practices**

The Ministry of the Environment (ministry) encourages the beneficial reuse of excess soils in a manner promoting sustainability and protection of the environment.

Excess soil is generated mainly by excavation during construction activities and cannot be reused at the site of generation. In most cases, this excess soil needs to be managed off-site. Excess soil must be managed in a sustainable manner in order to maintain a healthy economy while protecting the environment. The renewal of infrastructure, intensification of urban areas and the redevelopment of brownfield sites are important policy set out in the Growth Plan for the Greater Golden Horseshoe, the Provincial Policy Statement under the *Planning Act*, and are activities important to maintaining a healthy economy. These often activities generate large amounts of excess soil.

Where ever possible, the ministry first encourages all stakeholders to take measures to minimize the amount of soil generated during projects. For the soil that must be managed, the ministry encourages the reuse of excess soil as fill, where appropriate, provided that the use of the excess soil does not have a potential to cause an adverse effect to the environment, human health or impair water quality, as described under the ministry's Acts and Regulations. All stakeholders that generate, haul or receive excess soil are responsible for ensuring that the excess soil is being managed in an environmentally sound manner in accordance with all regulatory requirements.

There are several management options for excess soil that should be evaluated when soils are generated from construction projects. These options include:

- reusing the excess soil at the project site or other redevelopment sites where the quality of the soil is appropriate;
- remediating soil at the point of generation;
- use of the excess soil for site alteration or re-grading;
- the management of the excess soil at approved soil recycling or treatment facilities;
- placement at a commercial fill site; or
- disposal at a ministry-approved landfill site.

Excess soil reuse is encouraged where the analysis of the soil determines that the soil is appropriate to be placed at another site provided there are no adverse effects to human health and/or the environment.

Purpose of Document

This document is intended to provide guidance and outline best management practices for the management of excess soils generated from redevelopment and construction projects. Typically these soils are generated at construction projects such as large-scale residential construction activities (subdivisions, condominiums), large-scale commercial projects (commercial builds,

factories, warehouses, retail establishments) and similar types of development activities.

The document provides guidance on how to handle excess soil from a source site where it is generated, through to the transportation of the excess soil to a site where the soil can be reused for a beneficial purpose, such as site alterations, re-grading, or filling in excavations, along with temporary storage at stockpiling sites. These best management practices are consistent with the ministry's mandate under the *Environmental Protection Act*, R.S.O 1990, c. E. 19 (EPA). The EPA provides the ministry with the authority to address a discharge to the natural environment that is causing or may cause an adverse effect. These best practices are intended to assist in preventing and mitigating the potential for adverse effects to the environment and human health by those generating excess soils and those managing the receipt of excess soil for beneficial or commercial purposes. Adverse effect is specifically defined under the EPA. The ministry will assess the potential for adverse effect on a site-by-site basis.

These best practices are not intended to apply to small-scale construction activities or maintenance and construction activities at single-dwelling residential properties, or activities associated with small-scale municipal road work or sewer and water main construction. These are sites where small quantities of excess soil are being managed, such as the excavation required for the construction of a residential swimming pool or the excavation of soil at small-scale road building or repair projects.

Those involved in small-scale projects or soil management activities are encouraged to consider these best management practices and consult with receiving site owners on reuse or disposal options before moving excess soil off-site.

This document also provides guidance on temporary soil banks, procurement practices and provides examples of where beneficial reuse of excess soil is encouraged.

Considerations for Municipalities and Conservation Authorities

Options for managing excess soil may include the placement of excess soil at commercial fill sites or the establishment of temporary soil banks. In considering the appropriateness of these options, those handling excess soil must meet all applicable legal requirements including adherence to current provincial regulations, bylaws and permitting regimes established by local municipalities and/or conservation authorities. These best practices are intended to complement existing approvals under other provincial legislation and municipal by-laws, such as an existing site plans under the *Aggregate Resources Act*, R.S.O. 1990, c. A.6 (administered by the Ministry of Natural Resources) for permitted and licensed pits and quarries, or site alteration permits issued in accordance with local by-laws. These agencies are encouraged to consider these best practices when issuing permits or approvals, or when establishing by-laws for the management of excess soil.

General

Where environmental concerns are identified at a site, the ministry may assess all activities related to soil management, including those occurring at the generating or source site, hauling operations and soil receiving sites, and take appropriate abatement actions within the ministry's current legislative mandate on a case-by-case basis. This may include issuing preventative measures orders to ensure that environmental and community health and safety are protected from the potential for adverse effects associated with improper soil management.

For the purpose of this document, soil is defined as it is in Ontario Regulation 153/04 (Records of Site Condition – Part XV.1 of the EPA), namely:

Excess soil unconsolidated naturally occurring mineral particles and other naturally occurring material resulting from the natural breakdown of rock or organic matter by physical, chemical or biological processes that are smaller than 2 millimetres in size or that pass the US #10 sieve.

This document does not apply to materials outside the scope of the above definition, such as engineered fill products, asphalt, concrete and re-used or recycled aggregate product and/or mine tailings. Although not addressed under the requirements of this document, those managing these products should ensure the reuse and placement of these materials does not cause or have the potential to cause an adverse effect.

When handling excess soil, all reasonable steps should be taken to prevent any adverse effect on the environment, human health or the impairment of water quality resulting from soil management activities. This includes the introduction of contaminants to a receiving site or introduction of invasive plant or animal species. Consideration should be given to the existing conditions at any site before receiving excess soils to assess the appropriateness of the site to receive excess soils.

Excess soil should be free of odours, visible staining or debris. Excess soil which contains debris, such as garbage, shingles, painted wood, or other such waste, should be managed appropriately at a ministry-approved waste management site or recycling facility and should not be used as fill.

If, at any time, the soil management activity causes odours, pests, litter, dust, noise or other such negative impacts, including impacts from traffic and transportation, the ministry recommends that appropriate remedial actions be taken immediately to alleviate the adverse effect. This includes suspending all soil management activities, such as soil excavation, transportation or receiving, if necessary.

The ministry recommends that soil analysis be undertaken by a laboratory with an internationally recognized accreditation body [e.g. Standards Council of Canada (SCC) or Canadian Association for Laboratory Accreditation (CALA)] in accordance with the International Standard ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration

Laboratories.

Public consultation recommended through these best management practices may be undertaken in conjunction with other public communication activities, such as those required for the purpose or zoning or permitting through municipal by-laws.

Excess Soil Management

To effectively manage excess soils, the ministry recommends that best management practices be adopted by both soil source sites and soil receiving sites. These best practices are intended to assist in mitigating the potential for adverse effects to the environment and human health.

In addition to these best management practices, those engaging to any soil management activities are encouraged to consider all applicable industry codes of practice.

Best Management Practices for Source Sites

It is recommended that all sites that generate excess soil requiring off-site management retain the services of a Qualified Person (QP) as described under Section 5 of Ontario Regulation 153/04 - Records of Site Condition (O. Reg. 153/04), to develop a Soil Management Plan.

It is recommended that the Soil Management Plan include the following:

- A site plan that identifies all areas to be excavated with the estimated volume and soil quality of each area, along with detailed instructions to on-site contractors identifying the area and depth of soil to be excavated for off-site management.
- All excavated soil be appropriately characterized by a QP, or a person under the supervision of a QP, to determine the volume and chemical composition of the soil that is to be managed off-site.
- Soil should be tested to ensure that chemical parameters in the soil are characterized based on the assessment of the QP.
- All soil removed from the site be accompanied by documentation signed by a QP with appropriate and representative soil analysis, confirming the soil quality is acceptable for the intended receiving site based upon a review of the fill management plan at the receiving site.

It is recommended that excess soil not be transported from a Source Site to a potential receiving site without confirmation of a Fill Management Plan from the Receiving Site.

Once excess soil is removed from the Source site for off-site management, it is recommended that the QP obtain and maintain written documentation from the receiving site confirming that the soil was received and the quality and quantity was acceptable.

The Source Site should make available, any and all documentation, including all past environmental site assessment information, to the Receiving Site QP, if requested.

Best Management Practices for Commercial Fill and Other Large Receiving Sites

The ministry expects that all sites that manage excess soil will be constructed, operated and maintained in a manner that ensures the health and safety of all persons and prevents adverse effects to the environment or impairment to water quality.

Prior to establishing a site for the purpose of receiving excess soil, it is recommended that the owner of the site undertake public consultation sufficient to ensure that the local community and land owners are aware of the proposal and have an opportunity to comment on the proposal. The owner of the site should also undertake an assessment to establish the pre-fill site conditions for soil and ground water.

The ministry recommends that all sites established to receive excess soil retain the services of a QP, as described under Ontario Regulation 153/04 (O. Reg. 153/04), to design and implement a Fill Management Plan.

The Fill Management Plan should include a rationale for site location, including considerations related to future use of agricultural lands, source water protection areas, and groundwater recharge areas.

It is recommended that the Fill Management Plan include the following:

- Copies of applicable permits/zoning (Municipalities, Conservation Authorities, and Provincial Ministries where applicable)
- Appropriate Soil Quality Parameters for excess soil to be received at the site to be determined by the QP, based on site location/sensitivity, anticipated land uses, ground water use/sensitivity, pre-existing site concentrations or other factors as determined by the QP to ensure that there is no likelihood of adverse effect based on the importation of soil to the site.
- Characterization and pre-approval by the receiving site owner of all soil Source site locations prior to acceptance of any soil;
- Dust and Noise Controls;
- Traffic and Transportation Management;
- Receiving Soil
 - It is recommended that fill receiving sites not receive any excess soil from a Source Site without confirmation of a Soil Management Plan from the Source Site, which includes documentation from the Source Site QP with the analysis for the quantity and quality of soil being brought to the site;
 - Visual inspections of all incoming loads to screen for odours, visible staining or debris.
- Record Keeping
 - A system be established that provides written documentation for the tracking of all incoming loads of soil. This documentation should include, but is not limited to:
 - Date and Time of arrival to the site;
 - Name and Location of the Source site;

- Quantity of excess soil received;
 - Analytical records from the Source site signed by a QP;
 - Written confirmation by the Receiving Site QP acknowledging that the soil is acceptable for receipt at the site;
 - Rejections of any loads of soil due to visual inspection or review of analytical results
 - Once excess soil is received, written documentation must be provided to the Source site, confirming the soil was received and the quality was appropriate.
- Appropriate Signage at the site which identifies the Company Name, Hours of Operation, and, Daily and After-hours contact telephone numbers.
 - Public Notification.
 - Stormwater Management (to prevent ponding and flooding)
 - Erosion control and run-off controls to address potential impacts to drainage and to ensure materials remain where placed.
 - Audit Sampling Protocols
 - A sampling protocol be designed by a QP that would be representative of the volume of excess soil that is being shipped from a Source site and include a minimum of but not limited to monthly audit sampling from each source prior to deposit at the fill site.
 - Soil Placement/Segregation Plan.
 - This Plan will include provisions to ensure soil from each Source site is deposited in segregated locations within the Fill area such that it can be assessed and, if necessary, remediated.
 - Contingency Plan to identify actions that are to be taken in the event that audit sampling or other information identifies concerns with soil quality from a Source site
 - Owners/Operators may need to establish Financial Assurance, with the appropriate Municipality or Conservation Authority, against the site in advance of establishing operations to address any issues that may arise.

Similar provisions related to Receiving Soil, Record Keeping and Audit Sampling Protocols, should also be included in the Fill Management Plan when excess soils are received from soil treatment or soil recycling facilities.

Procurement Practices

Those who engage in procuring services related to large-scale soil management, such as municipalities, government ministries and agencies, should consider incorporating these best management practices when tendering contracts that may include the movement of excess soils.

Consideration should be given to ensuring that procurement products specify the need for Soil Management Plans at the site of excavation, and identifying the appropriateness of the receiving sites based on a Fill Management Plan. This is recommended to ensure that the owner of the site where the soil is being excavated is aware of the soil management considerations and

ultimate destination of the excavated soil in order for the owner to meet their regulatory responsibilities under applicable provincial legislation.

Best Management Practices for Temporary Soil Banks

In some cases, excess soil requires temporary storage prior to being reused. These locations are often referred to as Soil Banks.

As Soil Banks are likely to be established on a wide range of sites with site specific considerations, proponents are encouraged to consult with the local ministry District Office to clarify the appropriate controls to be implemented to prevent adverse environmental impacts – please use the following link for the appropriate office in your area.

http://www.ene.gov.on.ca/environment/en/about/regional_district_offices/index.htm

Consideration should also be given to whether other municipal or conservation authority approvals or permits are required for soil banking operations. This may include local restrictions for site volumes and stockpile heights.

Prior to establishing a temporary soil bank, the owner/operator should demonstrate that the excess soil is being stored on an interim basis, for direct transportation to receiving site, with an intended beneficial reuse. This includes the identification of potential soil receiving sites prior to establishing the soil bank. The ministry expects that all sites establishing temporary Soil Banks will be constructed, operated and maintained in a manner that ensures the health and safety of all persons and prevents adverse effects to the environment or impairment to water quality.

Soil shall not be stored at a soil bank for a period greater than 2 years. In the event that the banked excess soil cannot be reused within a 2 year period, the owner/operator must have a contingency plan for the appropriate off-site disposal or alternative reuse of all soil stored in the temporary soil bank. Soil storage may be extended for a period up to 5 years subject to consultation with the local District Office and the potential for a ministry approval to be required.

All incoming soils should be appropriately characterized by a QP (as described within O.Reg 153/04) and appropriate Soil Quality Parameters should be determined by the QP based on the intended reuse opportunities. Mixture and dilution of contaminated soils for management through soil banking is not supported through these best management practices.

Operational best management practices for soil banking encouraged by the MOE should include but are not limited to:

- Sites should be paved or otherwise covered with an impermeable surface.
- Sites should establish a stormwater management, erosion and run-off control plan.
- Site should establish a Dust Control Plan.
- Soil storage piles should be covered all times while not in use.
- Limits to Stockpile Heights based on site location and surrounding landuse.
- Site Signage and Security.
- Hours of Operation - with reference to local by-laws.

- Transportation Plans for trucks entering and leaving the site.
- Appropriate Truck Cleaning Areas.
- Daily Site Inspections.
- Notification to Surrounding land owners.
- Record Keeping Requirements.
- Audit Sampling Protocols for incoming soils determined by a QP.
- Financial Assurance may be required by the ministry, at the discretion of the Regional Director, or by municipalities or conservation authorities as part of an approval or permission.

The establishment of soil treatment facilities will continue to fall under the Environmental Compliance Approval requirements under Part V of the EPA. Soils that require treatment or are destined for treatment at an approved soil treatment facility cannot be stored at a temporary location (off the site of generation) without an Environmental Compliance Approval.

Civil Construction and Other Development Activities

While excluded from the broader scope of these best practices, the ministry promotes the reuse of excess soil generated by civil construction activities. This includes roadway and road right-of-way construction, sewer and water main construction, as well as other development activities, such as the construction of parking lots and small commercial developments. Reusing excavated soil from these construction activities, where appropriate, to support similar construction development activities, limits the need to import soil from natural or virgin sources. It also reduces the environmental impacts and costs associated with taking excess soils to commercial fill or landfill sites. All soils imported to a site for reuse should be of a quality appropriate for anticipated future land uses and to prevent adverse effects. Municipalities are encouraged to consider these soil reuse options in their procurement practices, and when issuing approvals or permits that include soil management and importation.

Ontario Regulation 153/04 Considerations

Under Ontario Regulation 153/04, Records of Site Condition, the ministry developed soil standards which support the filing of a Record of Site Condition (RSC). These generic standards were developed using scientific models and technical assumptions in order to meet specific objectives designed to support the redevelopment of brownfield sites in Ontario. These standards are not intended to address overall soil management activities. In some cases, these standards may not be appropriate to address soils being imported to a site without consideration being given to the rationale document used in their development. If used for any other purpose other than filing an RSC, a Qualified Person should consider the appropriateness of the proposed application and whether the assumptions used in the development of the generic standards remain valid. A Qualified person may determine that the generic standards are appropriate or may need to modify standards to suit the application.

Those managing soils are encouraged to consider this document when assessing the appropriate soil standards to apply to a site – “Rationale for the Development of Soil and Ground

Water Standards for Use at Contaminated Sites in Ontario, revised version April 15, 2011” available at http://www.ene.gov.on.ca/environment/en/resources/STDPROD_086519.html

In addition, owners of both Source sites and Receiving sites may be submitting a record of site condition (RSC) for filing under O. Reg. 153/04. Where this is the case, detailed requirements will apply. Before a Receiving site owner who intends to submit an RSC for filing receives excess soil, the owner and QP will need to review and comply with applicable provisions of O. Reg. 153/04 dealing with the receipt of soil at a RSC property. The provisions in this best practices document are intended to address general movement of excess soil for use as fill and are not intended and must not be taken to replace O. Reg. 153/04. For additional information, please refer to the ministry’s website (www.ene.gov.on.ca), and the Fact Sheet entitled, “Bringing Soil to an RSC Property” (PIBS 8429e – April 2011).