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Management of Excess Soil - A Guide for Best Management Practices

Best management practices for managing excess soil in a manner that promotes sustainability and protects the natural environment.

This guideline is not, and should not be construed as legal advice. A lawyer should be consulted on questions about the application or interpretation of the laws of Ontario as they relate to the matters covered by this guideline.

Background

Soil is an important resource. The protection and conservation of soil in Ontario is a valuable component of maintaining the environment for present and future generations. The Ministry of the Environment (MOE) encourages the beneficial reuse of excess soil in a manner promoting sustainability and the protection of the environment. The best practices described within this document are intended to assist those managing excess soil, particularly when the soil may be affected by contamination, in preventing and mitigating the potential for adverse effects.

What is "Excess Soil"?

For the purpose of this document, "excess soil" is soil that has been excavated, mainly during construction activities, that cannot or will not be reused at the site where the soil was excavated and must be moved off site. In some cases, excess soil may be temporarily stored at another location before the excess soil is brought back to be used for a beneficial reuse at the site where the soil was originally excavated.

For the purpose of this document, "soil" is defined as it is *Ontario Regulation 153/04* (Records of Site Condition Part XXV.1 of the Act):

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 definitions, such as compost, engineered fill products, asphalt, concrete, re-used or recycled aggregate product and/or mine tailings, other products, including soil mixed with debris such as garbage, shingles, painted wood, ashes, or other refuse.

Management of Excess Soil

Excess soil must be managed in a sustainable manner in order to maintain a healthy economy while protecting the environment. Both the *Growth Plan for the Greater Golden Horseshoe*, under the *Places to Grow Act, 2005*, and the Provincial Policy Statement under the *Planning Act* encourage important policy objectives, such as new or renewed infrastructure, intensification of urban areas, and the redevelopment of brownfield sites. These activities often result in the need to manage large quantities of excess soil. Soil conservation and management

should be integrated into all aspects of the planning and development process, from the initial concept, through permitting, construction, transportation and reuse of excess soil.

The *Environmental Protection Act*, R.S.O. 1990, c. E.19 (*EPA*) provides the MOE with the authority to address the discharge of a contaminant into the natural environment that is causing or may cause an "adverse effect", a term that is defined under the *EPA*. Where environmental concerns are identified at a site, the MOE may assess all activities related to soil management, including those occurring at the excavation site, during transportation or at sites where the soil is received, and may take appropriate actions within the MOE's legislative mandate. This may include issuing orders arising from actual or potential adverse effects associated with improper soil management.

Those managing excavated soil or excess soil must ensure that the management does not result in the discharge of a contaminant into the natural environment that causes or may cause an adverse effect, and when required, must provide notice of the discharge of the contaminant(s) into the natural environment in accordance with the provisions of the *EPA*.

If, at any time, the management of excavated soil or excess soil causes an adverse effect, such as odour, litter, dust, noise, or other impacts to the natural environment or water quality, appropriate preventive and remedial actions should immediately be taken to alleviate the adverse effect or impact. Until these issues are addressed, the owner/operator may need to suspend all soil management activities, including soil excavating, transporting or receiving.

Purpose and application of this document

Activities Covered under these Best Management Practices

The best management practices in this document provide guidance on how to handle excess soil beginning at the place where the soil is excavated (a "Source Site"), during the transportation of the excess soil, and through to a site where the excess soil can be reused for a beneficial purpose (a "Receiving Site").

This document also includes recommendations for temporary storage of excess soil at an intermediate site, between the Source Site and Receiving Site, where the intermediate site (a "Temporary Storage Soil Site") is owned or leased by the owner/operator of the Source Site or Receiving Site, for temporary storage of the excess soil.

The best management practices are not intended to be applied to small, low-risk construction or maintenance activities that are limited to single-dwelling residential properties, or activities associated with minor municipal road work or sewer/water main construction or repair. However, those involved in these smaller-scale projects and smaller-scale soil management activities are encouraged to consider whether the best practices may be useful, and to consult with any applicable approval authorities and Receiving Site owners/operators on reuse or disposal options before moving excess soil from a Source Site to a Receiving Site or Temporary Soil Storage Site.

This Document and Applicable Law

All those who create, manage, transport, receive or store excess soil are responsible for ensuring that the excess soil is managed in an environmentally sound manner. They must also meet all applicable legal requirements, including current provincial and federal regulatory requirements, such as: site alteration, noise and traffic by-laws and permitting regimes established by municipalities and Conservation Authorities; the soil management provisions in *Ontario Regulation 153/04* that relate to the submission and filing of a Record of Site Condition; and, when excavated soil and other excavated materials are being managed as a waste, the *EPA* and waste regulations.

These best management practices are intended to complement legal requirements; they are not themselves legal requirements or approvals and must not be taken to be, and they are subject to and do not replace legislation or legally binding documents of other kinds. Those who create, manage, transport, receive or store excess soil must be familiar with and remain responsible for complying with all applicable legislation and other legal requirements.

The best management practices are intended to provide general concepts which may be used to address the general management of excess soil for beneficial reuse purposes. Municipalities and Conservation Authorities are encouraged to consider the concepts set out in these best management practices when issuing permits or approvals, or establishing by-laws or policies for the management of excess soil, and make use of them as appropriate for the specific context. In this respect, where legally enforceable instruments seek to include or adopt the concepts in these best management practices, care should be taken to adapt the language in this document to make it appropriate for legally binding regulatory instruments and the particular requirements of the specific instrument.

Beneficial reuse and management options

All stakeholders should look for opportunities to minimize the amount of soil to be excavated during construction projects. When soil does need to be excavated, the MOE encourages the reuse of the excavated soil at the site where it is excavated, to limit the amount of excess soil that requires management off site. The MOE encourages use of the excess soil for a beneficial purpose, provided that the use complies with applicable legislation and where the use does not have a potential to cause an adverse effect within the meaning of the *EPA*, or impair water quality under the *Ontario Water Resources Act, R.S.O. 1990, c. O.40 (OWRA)*.

The MOE also promotes the reuse of excavated soil from civil construction projects at the site where the soil is excavated, or reuse of excess soil at other similar civil construction projects. The owners or developers of sites undergoing development activities that require soil for specific uses, such as the construction of berms or new roads, are encouraged to consider importing excess soil for this use. Reusing excess soil limits the need to import soil from natural or virgin sources, and may reduce the transportation distances associated with soil importation.

Management Options for Excavated Soil

There are several management options for soil excavated during construction that should be evaluated on a site by site basis. In all cases, the excavated soil or excess should be appropriate for its intended reuse. Some examples include:

On site

- direct reuse of the excavated soil at the excavation site; and
- treating or processing excavated soil and reusing the soil at the excavation site, in accordance with the terms and conditions of an Environmental Compliance Approval (ECA) where required.

Off Site

- reusing excess soil at a construction or development site where imported soil is required for purposes such as site alteration, filling in depressions/excavations, or re-grading;
- managing excess soil at an MOE-approved soil recycling, processing or treatment facility, in accordance with the terms and conditions of the ECA;
- reusing excess soil at a commercial site where soil is purchased to be reused at the site for a beneficial purpose, often referred to as a commercial fill site; and
- transporting excess soil to a MOE-approved waste disposal site for use as daily cover (as appropriate) or for final disposal in accordance with the terms and conditions of the ECA.

Both on-site and off-site management options for excavated soil may require temporary storage at another location prior to the soil being used for a beneficial reuse purpose.

Soil Treatment and Environmental Compliance Approvals

While soil can be reused in many instances, it is important to note that, when soils are affected by contamination to the point where they cannot be directly reused at the site where they were excavated or at a Receiving Site, treatment and processing options may be available to reduce the concentrations of contaminants. Soil treatment or processing facilities are not the subject matter of this document. The establishment and operation of soil treatment or processing facilities is subject to ECA requirements under the EPA.

Facilities that receive soil for storage prior to transportation to an approved soil treatment facility or MOE-approved waste disposal facility may also require an ECA.

General excess soil management considerations

Qualified Persons

Those who manage excess soil are encouraged to retain the services of a Qualified Person (QP) within the meaning of section 5 of *Ontario Regulation 153/04*. QPs are professional geoscientists and professional engineers. A QP who is retained should be someone who can exercise professional judgment based on his or her experience in order to advise on appropriate reuse options for the excavated soil or excess soil, and make these decisions based on appropriate analysis and characterization of the soil. The QP should use a risk-based approach and take into consideration the effects of loading associated with the concentrations of individual contaminants in soil and the impacts on the pre-existing, ambient conditions at the site. This will likely require a QP who is qualified to prepare or supervise a risk assessment, as set out section 6 of *Ontario Regulation 153/04*. Depending upon the intended beneficial reuse of the excess soil, the QP may need to consult with others to make decisions on the appropriateness of the excess soil for reuse, such as an agrologist if soil is to be used for an agricultural purpose.

Soil Quality

Understanding whether the placement of soil may cause an adverse effect or a degradation of the pre-existing condition of the Receiving Site requires knowledge of the quality of the excess soil from the Source Site and the quality of soil at the Receiving Site.

Excess soil reuse is encouraged where chemical analyses of soil at the Source and Receiving Sites determine that the soil is appropriate to be reused at the Receiving Site. The analyses should be based on the specific conditions at the sites, including the history of the sites, and take into consideration the intended and/or anticipated future land uses of the Receiving Site. Soil placement should not degrade the existing conditions at a Receiving Site; for example, a new contaminant should not be introduced to the Receiving Site and the concentration of an existing contaminant should not be increased at the Receiving Site. When determining if excess soil is appropriate for a Receiving Site, consideration should also be given to the physical characteristics of the excess soil, including soil type and geotechnical suitability.

Professional expertise and judgment will be necessary to inform the assessment and the extent of testing to be undertaken including a reasonable identification of potential contaminants based reviewing the history and conditions of the sites.

Mixture and dilution of contaminated soils to reduce the concentrations of contaminants should not be undertaken.

Ontario Regulation 153/04 sets out soil standards which apply when a Record of Site Condition (RSC) is being submitted for filing. These soil standards are not intended to address overall soil management activities. Additional information on the use and application of these standards can be found later in this document within the section entitled, "*Ontario Regulation 153/04 and the Soil and Ground Water Standards*".

Laboratory Analysis and Analytical Procedures

It is recommended that soil analyses 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)] and in accordance with the International Standard ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories. It is recommended that analytical procedures should be conducted as outlined in section 47 of *Ontario Regulation 153/04* and in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XXV.1 of the *Environmental Protection Act, July 1, 2011*.

Considerations for Pits and Quarries

This document does not apply to aggregate resources that are extracted from pits and quarries. Where it has been determined that a pit or quarry is a suitable location for the large-scale deposit of fill, owners are encouraged to design and implement a *Fill Management Plan* (as outlined below in these best management practices) to facilitate the transition from pit/quarry operation through to rehabilitation to a future land use. Where appropriate, elements of the *Fill Management Plan* may be incorporated into the appropriate regulatory tool, such as an aggregate licence/permit until rehabilitation and surrender are complete, or by municipal or conservation authority permits after rehabilitation.

Consultation and Engagement

Public consultation by the owners/operators of potential Receiving Sites is highly recommended and may be undertaken in conjunction with other public communication activities, such as those required for the purpose of zoning or permitting through municipal by-laws. If undertaken in conjunction with other communication activities, the event should be advertised to include information-sharing specific to the soil management activities.

Early in the process, proactive engagement with First Nations and Métis is recommended for those community partners that may be impacted or interested in the proposed activity.

Maintaining Records

For the purpose of any record-keeping mentioned in this document, it is recommended that records be retained for a minimum of 7 years after the completion of all excess soil management activities or the removal of all excess soil from a Temporary Soil Storage Site.

Invasive Species

Soil management activities can contribute to the introduction and spread of invasive species. Examples of species that can be moved to new areas through the movement of excess soil include European fire ants, Japanese knotweed, Phragmites, Giant hogweed, Garlic mustard and Dog strangling vine. Soil may contain plant parts, seeds, and invertebrates (e.g. European fire ants). Once introduced into a new area, these species can spread rapidly and often cause issues and concerns for landowners, and can have a significant impact on biodiversity. Disturbance and exposure of un-vegetated soil can also contribute to the establishment of invasive plants. Consideration should be given to controlling the introduction and spread of invasive species during all excess soil management activities. Those managing excavated soil may need to mitigate or eradicate invasive species or plant growth resulting from soil management activities.

Excess soil: Best management practices

The following are the recommended best management practices for excess soil.

General

To effectively manage excess soil, best management practices as outlined below, and as appropriate in individual circumstances, should be adopted by owners/operators of Source Sites, Receiving Sites and Temporary Soil Storage Sites. These best practices are intended to assist in preventing adverse effects. All sites that receive excess soil to be used for a beneficial purpose should be constructed, operated and maintained in a manner that ensures the health and safety of all persons and prevents adverse effects or impairment of water quality within the meaning of the *OWRA*.

In addition to these practices, those engaging in the management of excess soil are encouraged to consider applicable industry codes of practice.

Transportation

It is recommended that owners and operators engaged in excess soil management activities have a *Traffic and Transportation Management Plan*. This plan should address the following considerations where applicable:

- location and configuration of site entrances;
- truck queuing and parking;
- dust control and mud-tracking prevention/truck cleaning; and
- haul routes between Source Sites, Receiving Sites and Temporary Soil Storage Sites.

When preparing a *Traffic and Transportation Management Plan* those managing excess soil should consult with local upper-tier and lower-tier municipalities regarding appropriate transportation routes.

Municipalities and Conservation Authorities

Municipalities are encouraged to consider all tools available to assist in sustainable excess soil management at the local level.

The *Provincial Policy Statement and Provincial Plans*, such as the *Oak Ridges Moraine Conservation Plan*, *Niagara Escarpment Plan*, *Greenbelt Plan* and *Source Water Protection Plans*, contain specific policies related to protection of ground and surface water resources, features and systems, including highly vulnerable aquifer areas, as well as natural heritage features and systems. They also contain policies on site alteration within, and adjacent to, these features and systems, including landform conservation. Municipalities should consider a proactive evaluation of whether there are areas within the municipality which are not suitable for receiving excess soils or certain types of excess soils and build these areas into their municipal management regime, such as site-alteration by-laws.

Municipalities and Conservation Authorities should also consider projects within their areas of jurisdiction where excess soil may be excavated and, where possible, encourage the reuse of excess soil for local projects. Municipalities are further encouraged to undertake initiatives within their jurisdictions and to work with partner agencies, such as Conservation Authorities, to establish and track excess soil creation and identify sites that may require excess soil. A strategic and long-term management plan developed at a municipal level would be beneficial to anticipate soil generation and soil demand projects in order to plan soil reuse opportunities and to help inform future land use planning considerations, including the need for Temporary Soil Storage Sites.

Procurement

When tendering contracts that may include the management or movement of excess soil, municipalities, government ministries and agencies and others who procure services related to excess soil management, should consider incorporating these best management practices as requirements. Procurement documents should specify the need for a *Soil Management Plan* at a Source Site, and the need to identify the appropriateness of Receiving Site(s) based on a *Fill Management Plan*. This is recommended to ensure that, before the transportation of excess soil to a Receiving Site or a Temporary Soil Storage Site, the owner and operator of the Source Site is aware of excess soil management considerations and the ultimate destination(s) of the excess soil.

Source Sites

The owner/operator of a Source Site should retain the services of a QP to develop a *Soil Management Plan*.

The following items should be included in the *Soil Management Plan*:

- a copy of the detailed sampling and analysis plan for all excavated soil from the Source Site;
- the estimated volume of excess soil to be managed off-site;
- a site plan that identifies all the areas to be excavated, with the estimated volume and soil type and quality of each area, along with a copy of the detailed instructions to on-site contractors identifying the area and depth of soil to be excavated for off-site management; and
- a list of potential Receiving Sites linked to excavated areas of the site plan.

Excess soil should not be transported from a Source Site to a Receiving Site without confirmation that a *Fill Management Plan* exists for the Receiving Site. For excess soil being transported to a Temporary Soil Storage Site, the Source Site owner/operator should confirm that the Temporary Soil Storage Site is being operated with regard to the best management practices outlined below.

When excess soil is removed from the Source Site and transported to a Receiving Site:

- each load should be accompanied by documentation signed by the Source Site QP that includes appropriate and representative soil analyses from the soil at the Source Site confirming the soil quality is acceptable for the intended Receiving Site in accordance with the Receiving Site's *Fill Management Plan*;
- the Source Site owner and QP should obtain and keep written documentation from the Receiving Site confirming that the soil was received and the quality and quantity were acceptable in accordance with the Receiving Site's *Fill Management Plan*.

When excess soil is removed from the Source Site and transported to a Temporary Soil Storage Site:

- each load should be accompanied by documentation signed by the Source Site QP that includes appropriate and representative soil analyses from the soil at the Source Site confirming the soil quality is acceptable for storage at a Temporary Soil Storage Site;
- the Source Site owner and QP should obtain and keep written documentation from the Temporary Soil Storage Site confirming that the soil was received and the quality and quantity were acceptable for an intended reuse at a Receiving Site.

The owner/operator of a Source Site should ensure that all provisions of the *Soil Management Plan* are carried out.

If requested, the QP at the Source Site should make documentation, including all past environmental site assessment information, available to any proposed Receiving Site.

Receiving Sites

Prior to establishing a proposed Receiving Site, the owners/operators of the proposed Receiving Site should:

- undertake pre-consultation with local municipalities, any applicable Conservation Authorities and any local First Nations and Métis communities;
- undertake public consultation to ensure local community and land owners are aware of the proposal and have an opportunity to comment; and
- ensure the comments received are taken into consideration and are used to inform the final design and operation of the Receiving Site.

The owner/operator of a Receiving Site should retain the services of a QP to undertake an assessment to establish the current site condition of the soil and ground water to ensure the site is appropriate to be used as a Receiving Site. Appropriateness of the site should be based on, and take into consideration soil type and permeability in addition to nearby receptors and features, such as source water protection areas, natural hazard areas, surface water features, natural heritage features, wetlands and their areas of hydrologic influence, and ground water recharge rates, patterns and areas. Consideration should also be given to the future land use for the site, including potential agricultural uses and capacity.

Once the assessment has been undertaken to demonstrate the site is suitable to receive excess soil, the QP should prepare a *Fill Management Plan*, which outlines the overall condition and operation of the Receiving Site and should include the following:

- procedures to prevent the introduction of invasive plant or animal species;
- copies of any documentation regarding municipal or Conservation Authority licences/permits, provisions of provincial plans which apply to the site, and any requirements of provincial ministries;
- identification of appropriate soil quality and soil types for excess soil to be received at the site as determined by the QP based on site location/sensitivity, anticipated land use, ground water use/sensitivity, pre-existing site conditions or other factors as to ensure that there is no likelihood of adverse effect;
- dust and noise control measures;
- site security measures;
- *Traffic and Transportation Management Plan*;
- protocol for incoming excess soil specifying:
 - that each incoming load have documentation signed by the Source Site QP that includes appropriate and representative soil analyses confirming the soil quality is acceptable for the Receiving Site;
 - that visual and olfactory inspections will be conducted of all incoming loads to screen for odour, visible staining or debris; and
 - contingency measures for load rejections.
- a record keeping system to create and store written documentation to track each incoming load of excess soil including records of:
 - date and time of arrival of the load to the Receiving Site;
 - name and location of the Source Site;
 - volume of excess soil received;
 - documentation from the Source Site signed by a QP, including soil analytical results;
 - confirmation by the Receiving Site QP acknowledging that the incoming excess soil is acceptable for receipt at the site;
 - rejections of any loads of soil due to visual inspection or review of analytical results; and
 - documentation to the Source Site owner/operator and QP, once excess soil is received, confirming the soil was received and the type, quality and quantity was appropriate.
- clear signage at the site, which identifies a contact name, hours of operation (with reference to local by-laws where appropriate), and daily and after-hours contact telephone numbers;
- stormwater management plan, which includes provisions to prevent ponding and flooding;
- erosion control and run-off controls sufficient to prevent impacts to drainage and sediment discharge to nearby nearby watercourses or stormwater systems, and to ensure materials remain where placed;
- audit sampling protocols consisting of:
 - sampling protocols (designed by a QP) sufficient to produce results that would be representative of the volume of excess soil that is being received from each Source Site; and a

- 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.
- soil placement/segregation protocol sufficient to identify where excess soil from each Source Site has been placed, such that it can be assessed if required.

The owner/operator of a Receiving Site should ensure that all provisions of the *Fill Management Plan* are carried out.

Owners/operators of a Receiving Site may need to provide Financial Assurance, by an order issued by an MOE Regional Director or in another manner by appropriate agencies, including municipalities, before the site begins operating or during operations, to ensure any issues that may arise with material brought to the Receiving Site can be addressed in a timely and effective manner.

Some of the items listed above may be part of other approval requirements (for example, a site alteration or development permit) and owners/operators must ensure compliance with these legal requirements.

Owners/operators of Receiving Sites should also consider pre-approval of Source Sites based on a protocol determined by the Source Site and Receiving Site QPs.

Temporary Soil Storage Sites

In some cases, to facilitate reuse of excess soil, an owner/operator of a Source Site may need to store the excess soil at an intermediate location before the excess soil can be reused at a Receiving Site.

Temporary Soil Storage Sites are likely to be established on a wide range of sites with site-specific considerations. Those who establish these sites should consult with the local MOE District Office to clarify the appropriate site-specific controls to be implemented to prevent adverse effects. Up-to-date information on how to contact the local MOE District Office can be obtained from the MOE website.

Consideration should be given to whether municipal approvals or permits are required for Temporary Soil Storage Sites. These may include local restrictions for storage site volumes as a permitted use, or stockpile heights.

Generally, temporary soil storage activities should be located outside of areas regulated by Conservation Authorities.

Prior to establishing a Temporary Soil Storage Site, the owner/operator of the proposed site should have documentation confirming that the excess soil will be stored on an interim basis, prior to its direct transportation to identified Receiving Sites where the excess soil will have an intended beneficial reuse.

A Temporary Soil Storage Site should store the excess soil from a Source Site for a specified, pre-determined period. The owner/operator of a Source Site should identify the Receiving Site for any excess soil to be stored at a Temporary Soil Storage Site before the excess soil is moved from the Source Site to the Temporary Soil Storage Site for interim storage prior to reuse.

The MOE expects that all activities at a Temporary Soil Storage Site will be overseen by a QP, and the site will be constructed, operated and maintained in a manner that ensures the health and safety of all persons and prevents adverse effects within the meaning of the EPA or impairment of water quality within the meaning of the QWRA.

Temporary Soil Storage Sites should not be established for a period greater than 2 years. If the excess soil cannot be used at the previously identified Receiving Site within a 2 year period, the owner/operator of the Temporary Soil Storage Site should have a contingency plan for the appropriate off-site disposal or alternative reuse of all soil stored at the Temporary Soil Storage Site. If soil storage needs to be undertaken for a longer period, there

should be consultation with the local MOE District Office. Appropriate MOE action may be taken where it can be concluded that excess soil is not being stored temporarily before reuse at the identified Receiving Site.

All excess soil coming to a Temporary Soil Storage Site should be appropriately characterized by the Source Site QP, and appropriate soil type and quality should be determined by the Source Site QP, based on the intended reuse at a Receiving Site in accordance with the *Receiving Site Fill Management Plan*. Mixture and dilution of soil to reduce the concentrations of contaminants at Temporary Soil Storage Sites should not be undertaken.

Operational best management practices for Temporary Soil Storage Sites include:

- having a paved or otherwise impermeable surface;
- covering soil storage piles while not in use;
- limiting stockpile heights based on site location and site specific information, including adherence to local by-laws where applicable;
- conducting site inspections to ensure that the site is operating in accordance with its operational practices and that the storage of excess soil is not causing an adverse effect;
- notifying surrounding land owners to ensure they are aware of the site purpose and activities;
- establishing the following:
 - dust and noise control measures;
 - site security measures;
 - *Traffic and Transportation Management Plan*;
 - protocol for incoming excess soil specifying:
 - that each incoming load have documentation signed by the Source Site QP, that includes appropriate and representative soil analyses confirming the soil quality is acceptable for an intended Receiving Site;
 - that visual and olfactory inspections will be conducted of all incoming loads to screen for odour, visible staining or debris; and
 - contingency measures for load rejections.
- a record keeping system to create and store written documentation that tracks each incoming load of excess soil including written records of:
 - date and time of arrival of the load to the Temporary Soil Storage Site;
 - name and location of the Source Site;
 - volume of excess soil received;
 - documentation from the Source Site signed the QP, including soil analytical results for incoming loads;
 - rejections of any loads of soil due to visual inspection or review of analytical results; and
 - documentation to the Source Site owner/operator and QP, once excess soil is received, confirming the soil was received and the type, quality and quantity was appropriate.
- clear signage at the site, which identifies a contact name, hours of operation (with reference to local by-laws where appropriate), and daily and after-hours contact telephone numbers;
- stormwater management plan, which includes provisions to prevent ponding and flooding;
- erosion control and run-off controls sufficient to prevent impacts to drainage and sediment discharge to nearby nearby watercourse or stormwater systems, and to ensure materials remain where placed;
- soil placement/segregation protocol sufficient to identify where excess soil from each Source Site has been placed, such that it can be assessed if required.

Where Temporary Soil Storage Sites are accepting soil from multiple Source Sites, an audit sampling protocol should also be developed consisting of:

- sampling protocols (designed by a QP) sufficient to produce results that would be representative of the volume of excess soil that is being received from each Source Site; and a
- 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.

The owner/operator of a Temporary Soil Storage Site should ensure the operational best management practices outlined above are carried out.

Owners/operators of a Temporary Soil Storage Site may need to provide Financial Assurance, by an order issued by an MOE Regional Director or in another manner by appropriate agencies, including municipalities, before the site begins operating or during operations, to ensure any issues that may arise with material brought to the Temporary Soil Storage Site can be addressed in a timely and effective manner.

Ontario regulation 153/04 and the soil and ground water standards

Ontario Regulation 153/04 sets out standards for soil, ground water and sediment which apply when a Record of Site Condition (RSC) is submitted to the MOE for filing on the Environmental Site Registry. The generic contaminant standards are set out in, "Soil, Ground Water and Sediment Standards, for Use under Part XXV.1 of the *Environmental Protection Act*" dated April 15, 2011, (Standards) and are referred to as Tables 1 through 9. These Standards assume certain conditions at an RSC property as well as an intended property use. The property uses are categorized in *Ontario Regulation 153/04*.

The Table 1 Standards or "Background" values were developed from the Ontario Typical Range data collection program for soils. The program involved collection of uncontaminated surface soil from around the province. Naturally occurring concentrations vary throughout Ontario. Table 1 Standards are a statistical estimate of the upper levels of provincial background concentrations. Roughly 98% of uncontaminated Ontario soils will be below the Table 1 Standards for a specific substance. For some individual chemical substances, Table 1 Standards may be higher than ambient concentrations at a Receiving Site. The Standards set out in Tables 2-9 were developed using scientific models and technical assumptions in order to meet specific objectives designed to support the redevelopment of brownfield sites in Ontario.

The Standards are not intended to address overall soil management activities. For example, the Standards are based on assumed contaminant volumes and loadings and do not account for wide variance in soil volume and contaminant loadings which may occur with general soil management.

In some cases, the Standards may not be appropriate for assessing soil being imported to a Receiving Site without consideration being given to the rationale document used in their development. A QP should consider the appropriateness of the proposed application of the Standards and whether the assumptions used in the development of Standards remain valid. The rationale document is entitled, "Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario, revised version April 15, 2011".

QPs using the Standards in Tables 1-9 must ensure they are aware of how the Standards were developed, and the important assumptions behind the Standards are considered when they are applied to excess soil management activities. The assumptions and methods used in the development of the Standards are fully described in the rationale document. In undertaking this assessment, the QP should take into consideration the effects of loading associated with the concentrations of individual contaminants in soil and the impacts on the pre-existing, ambient conditions at the site, including the introduction of new contaminants to a Receiving Site. This will likely require a QP who is qualified to prepare or supervise a risk assessment, as set out section 6 of *Ontario Regulation 153/04*.

When considering the applicability of the Standards for use at a particular site, it is important to note that elevated concentrations of contaminants when compared to the Standards do not necessarily imply that:

- there is a risk to human health or the environment;
- remediation is required; or
- excess soil should be considered a waste.

An elevated concentration when compared to the Standards may suggest that additional site-specific studies, evaluations or assessments are warranted. These additional site-specific studies, evaluations or assessments

should, at a minimum, be done in accordance with these best practices.

Where RSCs are being submitted for filing

Owners of both Source Sites and Receiving Sites may be submitting an RSC for filing under the EPA and Ontario Regulation 153/04. This is an example of legislation which has legal requirements which apply to soil management and must be followed. The best management practices in this document are not legal requirements and do not apply to anything related to the filing of an RSC.

Before a Receiving Site owner who intends to submit an RSC for filing receives excess soil, the owner and OP will need to review and comply with applicable provisions of Ontario Regulation 153/04 (Part XII - Soil) dealing with the receipt of soil at a RSC property. For additional information, please refer to the MOE's website, and the Fact Sheet entitled, "Bringing Soil to an RSC Property" (PIBS 8429e April 2011).

PIBS 9603e

Updated: December 19, 2018

Published: April 5, 2016