

# Approach to Testing Excess Soil Under Ontario Reg. 406/19

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One of the biggest game-changers Ontario Regulation 406/19 will bring to Ontario's construction and redevelopment industry is a new requirement for detailed environmental characterization, coupled with prescribed documentation, before Excess Soil can be moved from the generating site (i.e., the Project Area). Previously, most pre-construction soil testing in Ontario focused on geotechnical characteristics of the soil to be excavated. When environmental sampling was carried out, it was often limited and focused on supporting soil disposal, as opposed to beneficial reuse.

Going forward, some types of projects, such as those involving agricultural greenfield sites, residential or parkland properties, may be exempt from the most rigorous sampling and testing regulatory requirements. However, incorporating a robust testing program, coupled with good record keeping, is always recommended as this due diligence will help stakeholders manage their potential liability relating to the Excess Soil reuse and help prevent scheduling delays and unforeseen costs. Additionally, testing will be required to determine whether the Excess Soil can be reused beneficially and will be accepted by the Reuse Site, or whether it requires management as a waste.

The following outlines the three key stages of soil testing that Ontario's municipalities, contractors and developers will need to consider for their projects to be successful in an O.Reg. 406/19 world.

## Know What to Look For

To understand what level of testing may be required under the Ontario Regulation 406/19 for your Project Area, or even to satisfy the various stakeholders' due diligence requirements, it is important to first recognize what kind of property you are working with. You can expect that the quality of soil on previously developed properties may be highly variable in environmental and geotechnical quality. On the other hand, for a "greenfield", typically an undeveloped agricultural property with fewer environmental sampling regulatory requirements, your focus may be more on the material's geotechnical properties.

Through a review of current and historical records such as an **Assessment of Past Uses (APU)**, your Qualified Person (QP) will be able to identify the Contaminants of Concern (COCs) for the Project Area based on the characteristics of the source Project Area and the nature of any areas of potential environmental concern (APECs) that have been identified. For most developed properties, the Regulation will call for all samples to be submitted (at a minimum) for bulk analysis of petroleum hydrocarbons and metals parameters along with pH.

Further, for projects where salt has been applied for safety purposes (e.g., a roadway), sampling will also need to include electrical conductivity (EC) and sodium adsorption ratio (SAR) unless the Excess Soil is to be reused at a site where similar practices will be employed (i.e., use of road salt for vehicle and pedestrian safety). For soils and sediments removed from stormwater ponds however, the expands this minimum parameter list to include polycyclic aromatic hydrocarbons, (EC) (SAR).

- **Action:** Through completion of an APU and understanding of the Regulation's minimum sampling requirements that might apply to your project, confirm your QP has a thorough understanding of what COCs will need be tested for early in the process.
- **Benefit:** The time and effort required for sample collection can be significant. Accounting for COCs up front will reduce the potential for resampling in the future, resulting in additional cost and project delay.
- **Checkpoint:** Are any portions of the Project Area known or suspected to be affected by the discharge of a specific contaminant? Were any impacts to soil quality identified during sampling that were not previously anticipated? If so, the QP will want to consider modifications to the sampling plan.

## Right-sizing Your Sampling Program

Based on the volume of soil to be excavated, potential COCs, and minimum Regulation requirements (if applicable) for sampling and analysis, your QP will set out a **Sampling and Analysis Plan (SAP)** for assessing the environmental quality of the soil. For projects where sampling and analysis is a regulatory requirement, the Regulation outlines a minimum number of samples which is calculated based on the volume of soil to be excavated and by the method of sampling: in-situ (pre-excavation) or ex-situ (stockpile sampling). Starting with a minimum of 3 samples for up to 600 cubic metres (m3) for in-situ soils and 130 m3 for stockpiled soils, larger projects where soil volumes are expected to reach 40,000 m3 will require well over 100 samples to be submitted. In addition, collected samples need to be appropriately distributed so that they are representative of all of the Excess Soil quality and have addressed any identified APECs.

- **Action:** Consider characterizing soil quality with a staged approach, incorporating both in-situ sampling (pre-construction, at the design stage) and ex-situ sampling (during and post-construction) to address potential data gaps.
- **Benefit:** An in-situ sampling program concurrent with geotechnical investigation activities can proactively identify potential problem areas and help the Project Leader identify potential Reuse Sites much earlier in the process. Ex-situ sampling can address data gaps with respect to soil quality and meeting minimum sample frequency requirements (if applicable).
- **Checkpoint:** Do you understand the characteristics and/or limitations of the Reuse Sites being considered (i.e., what Excess Soil Quality Standards apply)? This will help determine whether the soil can be beneficially reused at that location "as is", whether the beneficial reuse assessment tool, or "BRAT" needs to be used, whether some pre-treatment is required or whether some (or all) of the soil might need to be managed as a waste.

## Finishing Touches – Don't Forget Leachate

Leachate is the liquid formed when precipitation falls on and then flows through the soil, potentially mobilizing contaminants via groundwater. Previously, leachate testing has generally been limited to waste characterization purposes using the Toxicity Characteristic Leaching Procedure (TCLP) method which focused on simulating the natural processes that occurs in a landfill.

Now O.Reg. 406/19 emphasizes the consideration of the leachate generating potential of Excess Soil. As such, there are also minimum sampling and analytical requirements for leachate testing (typically 10% of the samples submitted for bulk analysis) coupled with specific standards for comparison that are determined by the Reuse Site characteristics. Although multiple procedures are permitted by the Regulation, it is recommended that the recently developed method for a modified Synthetic Precipitation Leaching Procedure (mSPLP) be used as this more closely simulates the process that might occur as a result of precipitation infiltrating through Excess Soil placed at the Reuse Site.

- **Action:** Consult with your QP to determine which leachate method best fits for your purposes – and note the sampling and analytical requirements for each.
- **Benefit:** Selecting the most appropriate leachate testing procedure will help you meet the requirements of the regulation, and more readily gain acceptance of your excavated soil by the Reuse Site.
- **Checkpoint:** Confirm, early in the process, which qualified test laboratories can perform the mSPLP (or standard SPLP) and meet the analytical requirements for the regulation.

O.Reg. 406/19 introduces new guidance and minimum requirements for testing Excess Soil, that is required before the soil can either be beneficially reused or managed as a waste. Ontario's municipalities, contractors and developers that proactively incorporate environmental sampling into their work plan, right from the start of their projects, will have a greater chance of success navigating this new regulatory environment.


### ABOUT THE AUTHORS

**Denise Lacchin** has over 28 years of experience providing brownfield redevelopment strategies and solutions in Ontario. She has successfully worked with clients assessing environmental impacts on numerous sites contaminated with petroleum hydrocarbons, inorganics and metals, chlorinated solvents and low-level radioactive waste and developing strategies for remediation that complements their redevelopment objectives. Her experience as a Qualified Person (QPESA) in Ontario and as an Environmental Professional (EP) for Site Assessment and Reclamation, includes; developing soil management plans, implementing soil management best practices and tracking systems, and using risk-based approaches for large brownfield/infrastructure sites in accordance with Ontario Regulation 153/04 and now the new On-Site and Excess Soil Management Regulation 406/19.


**Carl Schroeder** (M.A.Sc., P.Eng.) is a professional engineer in Ontario with over twenty (20) years of experience as an environmental consultant with Golder. Carl is a Qualified Person under Ontario Regulation 153/04 and has assisted numerous clients with Environmental Site Assessments (ESAs) and site remediation for general due diligence and in support of Record of Site Conditions in this role. As a generalist environmental engineer, over the course of his career Carl has undertaken or managed hundreds of environmental projects for large and small clients, including the provision of strategic, regulatory and practical advice to clients on managing their environmental risk relating to property transactions, management of excess soil material, demolition, decommissioning and infrastructure (culvert) management.

## PROJECTS & PERSPECTIVES


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**The 3 Rs Of Excess Soil: Regulate, Reduce, Reuse**



**Navigating Uncharted Waters: Ontario's New Excess Soil Regulation**



**Tracking And Data Management For Excess Soil Under Ontario Regulation 406/19**



**Approach to Testing Excess Soil Under Ontario Reg. 406/19**