

Memorandum

APAC-C 1-2024

Subject: Soil Health

Date: April 19, 2024

To: Agricultural Policy and Action Committee

From: Susan McPetrie, Planner

At the September 2023 meeting of the Agricultural Policy and Action Committee (APAC), there was discussion related to soil health and Local Area Municipal site alteration by-laws as they pertain to the regulation of soil importation on agricultural lands. Staff indicated that a memo with an overview of soil health would be brought to the Committee in the future. The purpose of this memo is to provide this additional information with respect to soil health and the conservation and protection of agricultural soil, including an overview of relevant provincial and local legislation.

Soil Health Benefits

Soil is the foundation of a healthy environment and a sustainable, productive food system. Healthy soils support increased crop growth, yield and quality, while also contributing to carbon sequestration, improved water quality and increased biodiversity. As pressures on the food production system and the natural environment continue to grow, maintaining soil health is increasingly important.

Soil health can be defined as a measure of how well soil currently performs all its functions and how those functions are being preserved for future use. Essential functions of a healthy soil include:

- Sustaining plant and animal life;
- Regulating water;
- Cycling nutrients;
- Providing physical support and stability; and
- Filtering and buffering potential pollutants.

A healthy soil has sufficient organic matter, good soil structure and adequate pore space to allow the movement of water and air. It also has well-balanced nutrients and a suitable pH level for growing crops. Soil with these characteristics will be less prone to

erosion and compaction and will have a greater capacity to absorb and retain water, enabling crops to withstand both floods and droughts more easily. A healthy soil will also have a high level of biological diversity, which increases resilience to environmental challenges, including pests and disease.

Threats to Soil Health

Ontario's agricultural lands are under increasing stress and face multiple factors that threaten soil health, including:

- Increased demands on soils to grow food for an increasing provincial and global population;
- Changes in cropping, tillage and other practices that can degrade soil health;
- Over-application of mineral fertilizers and pesticides;
- Increased frequency in extreme weather due to climate change;
- Soil pollution from road salt, chemical spills and other contaminants; and
- Encroaching development.

These pressures can lead to decreased function and health of the soil. The United Nations Food and Agricultural Organization's 2015 report 'The Status of the World's Soil Resources' identified that soil erosion, nutrient depletion, loss of soil organic carbon and declining soil biodiversity are the most significant soil issues in North America.

Soil Management Practices

It can take many years for healthy soil to be created through natural processes and very little time to degrade, therefore conservation and protection of soil is essential. Good soil management practices can enhance and sustain soil health. While specific management techniques vary with the context of each farm, they are generally guided by the following principles:

- Maximize soil organic matter;
- Minimize soil disturbance (e.g., reducing tillage and application of pesticides);
- Keep the soil covered with living plants or plant residue;
- Maintain living roots in the soil throughout the year; and
- Maximize plant diversity.

Key practices founded on these principles include reducing tillage, planting cover crops, companion planting, diversifying crop rotations and applying organic amendments.

However, there is no single, prescriptive approach to improving soil health. Soil conditions and requirements differ from one farm to another. Decisions about soil management are best made by the individual farmer based on their understanding of their fields and crops and what works best for their operation.

Resources and Supports

Shifting farming practices to incorporate soil health management can involve experimentation and take time to yield financial benefits, with the risks borne solely by the farmer. For this reason, external resources, including financial support, can play a critical role in facilitating the transition. The federal and provincial governments have long-standing programs in place to provide technical and financial support for farmers. Key funding opportunities provided include the On-Farm Climate Action Fund and the Resilient Agricultural Landscape Program, both aimed at helping farmers adopt beneficial management practices that make their lands more productive, while also sequestering carbon and reducing greenhouse gas emissions. In addition, the On-Farm Applied Research and Monitoring program supports continued monitoring of soil health and water quality, as well as the establishment of on-farm trials to evaluate the effectiveness of best management practices. The provincial government also offers an extensive library of soil health and management info sheets and guides for best practices (www.ontario.ca/page/soil-health-ontario#section-1).

Conservation authorities in Ontario may also provide funding to farmers for stewardship projects. These programs are primarily focused on the ecological benefits of conservation farm practices, such as improving habitat and water quality. In Niagara, the Niagara Peninsula Conservation Authority offers restoration grants for projects that address nutrient management and soil stabilization, as well as one-time grants to promote the establishment of cover crops.

Municipal governments are often less directly involved in agricultural funding; however, Wellington County offers a recent example of a municipal level program intended to promote soil health and sustainable farming practices. In 2022, the County launched Experimental Acres as a pilot program to support farmers in their first year of trying new practices on a small scale. It offers financial and research support to help farmers test a practice before scaling up to their whole operation. In 2023, the program expanded to include farms in Dufferin and Grey Counties, supporting a total of twenty-one (21) farms. With the success of the program, Wellington County has created a guide for municipalities interested in replicating this model.

There are also non-profit and non-governmental organizations that provide resources and support for Ontario farmers, such as the Ontario Soil Network, the Ontario Crop and Soil Improvement Association and the Ecological Farmers Association of Ontario. Currently, the Greenbelt Foundation and the Soil Health Institute are offering free soil testing to grain and oilseed farms in the Golden Horseshoe Region, which will allow farmers to evaluate their current soil health compared to similar soils in their region and measure the impact of different management practices on soil health.

Legislation

Provincial

One soil management issue that has been addressed through legislation is excess soil reuse. Excavation for development projects often generates large amounts of excess soil that cannot be reused at the site of excavation and must be taken off-site. The Ministry of the Environment, Conservation and Parks estimates that 25 million cubic metres of excess soil is generated in Ontario every year. While this soil can potentially be put to beneficial use on agricultural or other lands, some excess soil may contain contaminants that could threaten soil health and water quality. Additionally, the improper management of excess soil can create local issues such as noise, dust, truck traffic, road damage and drainage problems.

In December of 2019, the Ontario government created the On-site and Excess Soil Management Regulation under the *Environmental Protection Act (1990)*. The regulation is intended to support proper management of excess soil and ensure that, as a valuable resource, excess soil does not end up as waste in municipal landfills. Under the regulation, excess soil is to be reused for a beneficial purpose, and the quality and quantity of the soil to be deposited at the reuse site are to be appropriate for that purpose.

The regulation is being implemented in three phases. The first two phases, which have already taken effect, established rules and standards for excess soil reuse, clarified when soil is not designated as a waste, and outlined the requirements for testing, documentation and tracking of excess soil for certain projects. The final requirements under the regulation will come into force on January 1, 2025. At that time, restrictions will come into place to ensure that excess soil will not be landfilled unless it is used for a beneficial purpose at the landfill, such as daily or final cover, berm construction or any other use that supports the operation of the landfill.

On October 17, 2023, the Province proposed amendments to the regulation to provide clarification on certain regulatory requirements and remove barriers to the reuse of low-risk soils. One key proposed change, as it relates to soil health, is the amendment of rules to enable the use of salt-impacted soil on agricultural properties in areas not used for growing crops or pasturing, or in natural areas. The commenting period for these changes closed on December 1, 2023.

Municipal

The Province has recognized the role of municipalities in excess soil management within the regulatory framework. While the regulation sets out generic requirements for soil quality and quantity, if a site-specific instrument, such as a municipal by-law, outlines requirements related to the quality and/or quantity of excess soil to be received at a reuse site, the instrument prevails.

Single-tier and lower-tier municipalities can use site alteration by-laws to regulate the placement of excess soil, including establishing a permitting system for these activities. Through these site alteration by-laws, the municipality may impose conditions on the quantity and quality of soil being deposited at reuse site. They may also address appropriate beneficial uses for soil reuse and set site-specific operational requirements.

Municipal authority over site alteration is broad, however there are limitations. As set out in the Municipal Act (2001), site alteration as a condition to the approval of a site plan, a plan of subdivision or a consent is exempt from a by-law. Additionally, site alteration on agricultural lands may be exempt from site alteration by-laws if considered a 'normal farm practice' carried out as part of an agricultural operation. There is no definitive list of normal farm practices. Normal farm practices are determined on a case-by-case basis by the Normal Farm Practices Protection Board.

Ten (10) of the Local Area Municipalities (LAMs) in Niagara have by-laws that address site alteration and placement of fill (refer to Appendix I). These by-laws prohibit site alteration without obtaining a permit to do so. As part of the permit application process, property owners may be required to submit information about the project, such as the proposed haul route, a lot grading and drainage plan, and a site alteration plan with information about the site, including existing soil types, surrounding water bodies, proposed sediment control measures and other location and project specifications. While not always the case, some by-laws specify maximum allowable volumes within a certain period. For example, in Wainfleet, Thorold and Grimsby, permits for site alteration that involve importing more than 1000 cubic metres of excess soil within any

twelve (12) month period may only be issued when approved by Council. Most of the LAMs rely on provincial standards and enforcement to ensure fill does contain contaminants. However, for site alteration on agricultural lands, the Welland and Port Colborne by-laws also require a report signed by a professional engineer or soil scientist confirming that the proposed alteration will not negatively affect the soil fertility or capacity.

In the past, there have been issues in some municipalities with property owners accepting excess soil on a commercial basis or developers purchasing properties for the purpose of dumping excess soil from construction. Recent conversations with by-law enforcement staff in Wainfleet, West Lincoln, Grimsby, Lincoln, Pelham, and Fort Erie indicate that this is not currently a significant or on-going issue and that the by-laws have been effective in addressing concerns related to site alteration. In most cases, when by-law enforcement officers become aware of site alteration occurring without a permit, they are able to successfully educate the property owner about the by-law requirements and achieve compliance under the permitting process.

There are instances of non-compliance that require by-law enforcement to issue fines. In addition to fines issued under the Provincial Offences Act, many municipalities are now implementing Administrative Monetary Penalty Systems (AMPS), which provide a faster internal process for payment, appeal and collection of penalties that bypasses the court system. In Grimsby, the AMPS approach has proven to be an effective deterrent in an area with a history of issues of commercial soil importation. Conversely, Niagara-on-the-Lake has faced challenges with enforcement, as the by-law currently references fines no longer in the provincial legislation. The Town has retained a consultant and is in the process of updating the by-law. Lincoln is also looking at revising its by-law to include consideration of the proposed use of imported soil and encourage alternatives where appropriate.

Conclusion

Niagara's soil health is of critical importance to the region's agricultural sector. Protecting and enhancing soil health not only supports a productive agricultural system, but also contributes to environmental sustainability and resilience against the challenges of climate change. Effective soil management practices, funding and regulation play a pivotal role in promoting soil health in Niagara.

Respectfully submitted and signed by

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