



Waste Management of Canada Corporation

Environmental Assessment for a New Landfill Footprint at the West Carleton Environmental Centre

AGRICULTURE DETAILED IMPACT ASSESSMENT

Prepared by:

Weston Graham and Associates Ltd.

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60242342

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1. Introduction

This report documents the Agriculture impact assessment of the Preferred Alternative Landfill Footprint for the Environmental Assessment (EA) for a new landfill footprint at the West Carleton Environmental Centre (WCEC). In the preceding Alternative Methods phase of the EA, a net effects analysis as well as a comparative evaluation of the four alternative landfill footprint options were carried out in order to identify a Preferred Alternative Landfill Footprint. The Preferred Alternative Landfill Footprint was determined to be Option #2. The potential environmental effects, mitigation or compensation measures to address the potential adverse environmental effects, and the remaining net effects following the application of the mitigation or compensation measures were identified for the Preferred Alternative Landfill Footprint.

The Preferred Alternative Landfill Footprint was refined based on stakeholder comments received and in order to further avoid or mitigate potential adverse environmental effects, and is illustrated in **Figure 1**.

A Facility Characteristics Report (FCR) as well as a description of the ancillary facilities associated with the WCEC have been prepared so that potential environmental effects and mitigation or compensation measures identified for the Preferred Alternative Landfill Footprint during the Alternative Methods phase of the EA can be more accurately defined, along with enhancement opportunities and approval requirements.

The discipline-specific work plans developed during the ToR outlined how impacts associated with the Preferred Alternative Landfill Footprint would be assessed. The results of these assessments have been documented in the following 10 standalone Detailed Impact Assessment Reports:

- Atmospheric (Air Quality, Noise, Odour, and Landfill Gas)
- Geology and Hydrogeology
- Surface Water
- Biology
- Archaeology
- Cultural Heritage
- Transportation
- Land Use
- Agriculture
- Socio-Economic (including Visual)

Despite being standalone documents, there are; however, interrelationships between some of the reports, where the information discussed overlaps between similar disciplines. Examples of this include the following:

- Geology and Hydrogeology, Surface Water and Biology (Aquatic Environment); and
- Land Use, Agricultural, and Socio-Economic (including Visual).



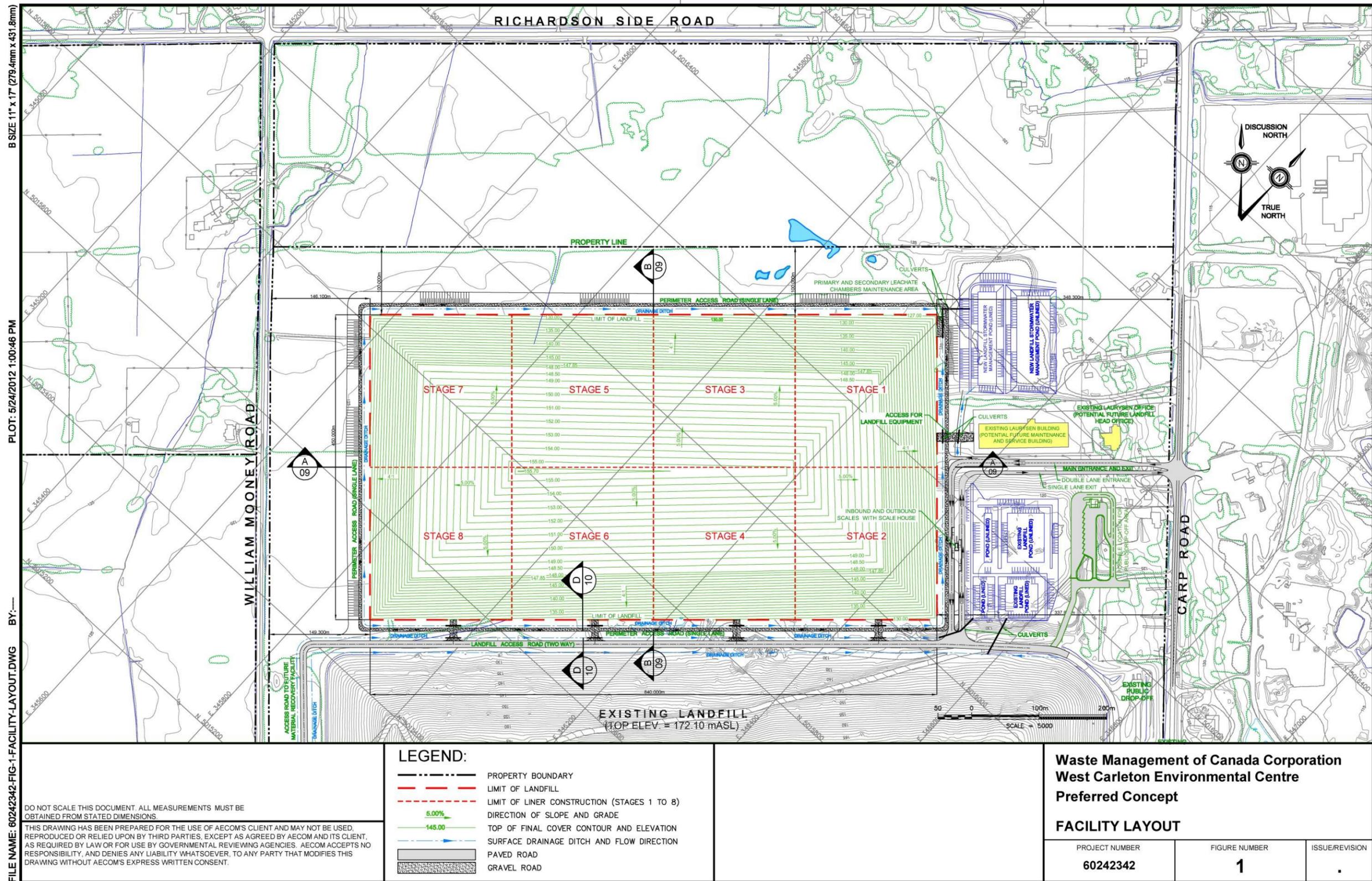


Figure 1. Preferred Alternative Landfill Footprint

1.1 Description of the Preferred Alternative Landfill Footprint

The southern half of the Preferred Alternative Landfill Footprint is on Waste Management (WM)-owned lands and the northern half is on lands that WM has options to purchase. A 100 m buffer is maintained between the north limit of the Preferred Footprint and the private lands to the north (e.g., lands which front onto Richardson Side Road) in accordance with Ontario Regulation 232/98, and an approximate 350 m buffer is maintained between the east limit of the footprint and Carp Road. A light industrial building (e.g., the Laurysen building) is situated in the eastern portion of the WM optioned lands, which WM anticipates using for equipment storage/maintenance or waste diversion activities in the future. An approximate 45 to 50 m buffer is maintained between the toe of slope of the existing and new landfill footprint, thus allowing sufficient area for a new waste haul road to the new landfill footprint, and for maintenance and monitoring access. The location of the west limit of the Preferred Alternative Landfill Footprint was determined by maintaining the noted buffers and providing the required 6,500,000 m³ of disposal capacity, while maintaining a landfill elevation below 158 mASL (as reported in the CDR) and maintaining side slopes required by Ontario Regulation 232/98 (e.g., varying from 4H to 1V to 5%). This results in an approximate 146 m buffer between the west limit of the Preferred Landfill Footprint and William Mooney Road. This buffer preserves a portion of the existing woodlot within the west part of the WM-owned lands.

The final contours of the landfill are shown in **Figure 1** and reflect a rectangular landform with a maximum elevation (top of final cover) of 155.7 mASL. This elevation is approximately 30.7 m above the surrounding existing grade. By comparison, the maximum elevation of the existing Ottawa WMF landfill is approximately 172 mASL or approximately 47 m above the surrounding existing grade. The contours reflect maximum side slopes of 4H to 1V, and a minimum slope of 5%. The total footprint area of the new landfill is 37.8 ha.

1.2 Facility Characteristics Report

The FCR presents preliminary design and operations information for the Preferred Alternative Landfill Footprint (Option #2) and provides information on all main aspects of the landfill design and operations including:

- site layout design;
- surface water management;
- leachate management;
- gas management; and,
- landfill development sequence and daily operations.



The FCR also provides estimates of parameters relevant to the detailed impact assessment including estimates of leachate generation, contaminant flux through the liner system, landfill gas generation, and traffic levels associated with waste and construction materials haulage.

1.3 Other WCEC Facilities

In addition to the new landfill footprint, the WCEC will also include other facilities not subject to EA approval. These include:

- A material recycling facility
- A construction and demolition material recycling facility
- An organics processing facility
- Residential diversion facility
- Community lands for parks and recreation
- A landfill-gas-to-energy facility
- Greenhouses

Although these facilities do not require EA approval, it is important to consider environmental impacts from all potential activities at the WCEC, not just the new landfill footprint. As such, the synergistic impacts of these facilities in relation to the Preferred Alternative Landfill Footprint will also be assessed in the EA.

1.4 Agriculture Study Team

The Agriculture study team consisted of Bill Graham, Professional Agrologist of Weston Graham & Associates. He was responsible for preparing the Existing Conditions report, completing the comparative evaluation and net effects analysis for the Alternative Landfill Footprint Options, and conducting the Detailed Impact Assessment with respect to Agriculture.



2. Study Area

The specific On-Site, Site-Vicinity, and Regional study areas for the Preferred Alternative Landfill Footprint at the WCEC are listed below:

- On-Site** the lands required for the Preferred Alternative Landfill Footprint;
- Site-Vicinity** the lands in the vicinity of the Preferred Alternative Landfill Footprint, bounded by Highway 417, Richardson Side Road, and Carp Road; and,
- Regional** the Agriculture Impact Assessment Report does not identify the need for an analysis at the regional level.

The Agriculture Study Area is shown on **Figure 2**.

3. Methodology

The assessment of impacts associated with the Preferred Alternative Landfill Footprint was undertaken through a series of steps that were based, in part, on a number of previously prepared reports (Agriculture Existing Conditions Report, Agriculture Comparative Evaluation Technical Report). The net effects associated with the four Alternative Landfill Footprint Options identified during the Alternative Methods phase of the EA were based on conceptual designs. These effects were reviewed within the context of the preliminary design plans developed for the Preferred Alternative Landfill Footprint, as identified in the FCR, to determine the type and extent of any additional investigations required to ensure a comprehensive assessment of net effects. No additional investigations were found to be needed.

The previously identified potential effects and recommended mitigation or compensation measures associated with the Preferred Alternative Landfill Footprint (documented in the Agriculture Comparative Evaluation Technical Report, September 2011) were reviewed to ensure their accuracy in the context of the preliminary design for the Preferred Landfill Footprint. Based on this review, the potential effects, mitigation or compensation measures, and net effects associated with the Preferred Alternative Landfill Footprint were confirmed and documented.

Following this confirmatory exercise, the requirement for monitoring in relation to net effects was identified, where appropriate. Finally, any Agriculture approvals required as part of the implementation of the Preferred Alternative Landfill Footprint were identified.



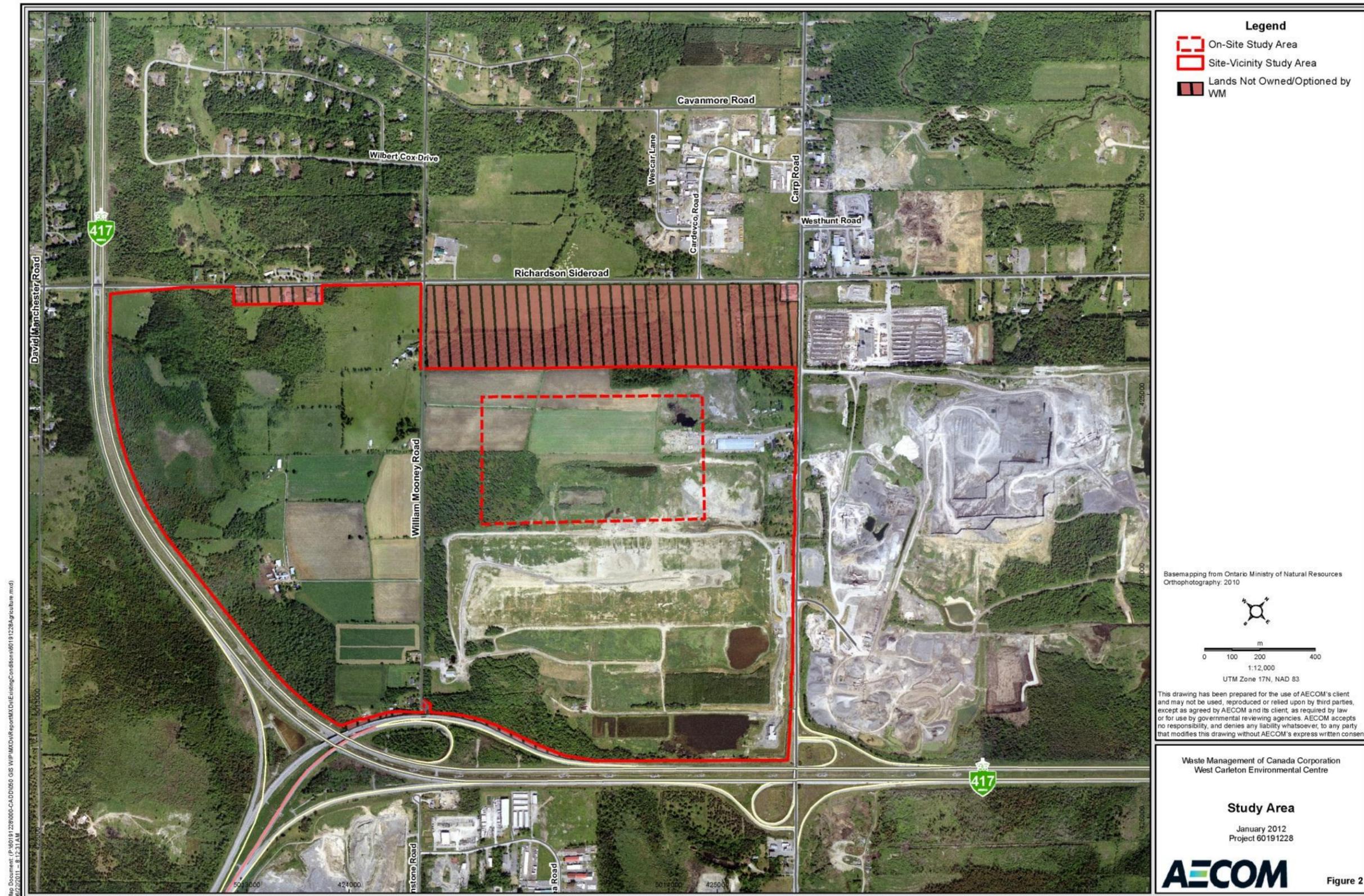


Figure 2. Agriculture Study Area

4. Additional Investigations

No additional investigations were required for the Agriculture Detailed Impact Assessment Report.

5. Detailed Description of the Environment Potentially Affected

5.1 On-Site (The Preferred Landfill Footprint)

The Preferred Landfill Footprint is bounded by the current Ottawa WMF operations, William Mooney Road, a rural property, and Carp Road. The Preferred Landfill Footprint is separated from Richardson Side Road by a property that is approximately 302.5 m wide.

The cleared agricultural land on the Preferred Landfill Footprint is comprised of four fields abutting William Mooney Road for a distance of approximately 295 m, and stretching toward Carp Road for approximately 835 m. The area of the four fields is estimated to be approximately 24 ha. The soil map (**Figure 3**) indicates that the four fields are mainly Osgoode sand with some Kars soil toward the part of the Preferred Landfill Footprint nearest Carp Road. The Osgoode soil has an agriculture soil capability rating of Class 3, and the Kars soil is a Class 4 (Report No. 58 of the Ontario Institute of Pedology, Vol. 1, p. 88 & 91). The fields are farmed by the dairy farmer on the west side of William Mooney Road, to provide feed for his herd.

5.2 Site-Vicinity

There are two active farms within the Site-Vicinity Study Area. The two active farms are across William Mooney Road, west of the Preferred Landfill Footprint. One is a dairy farm and the second is a part-time beef farm. The two farms include more than 62 ha of cleared land.



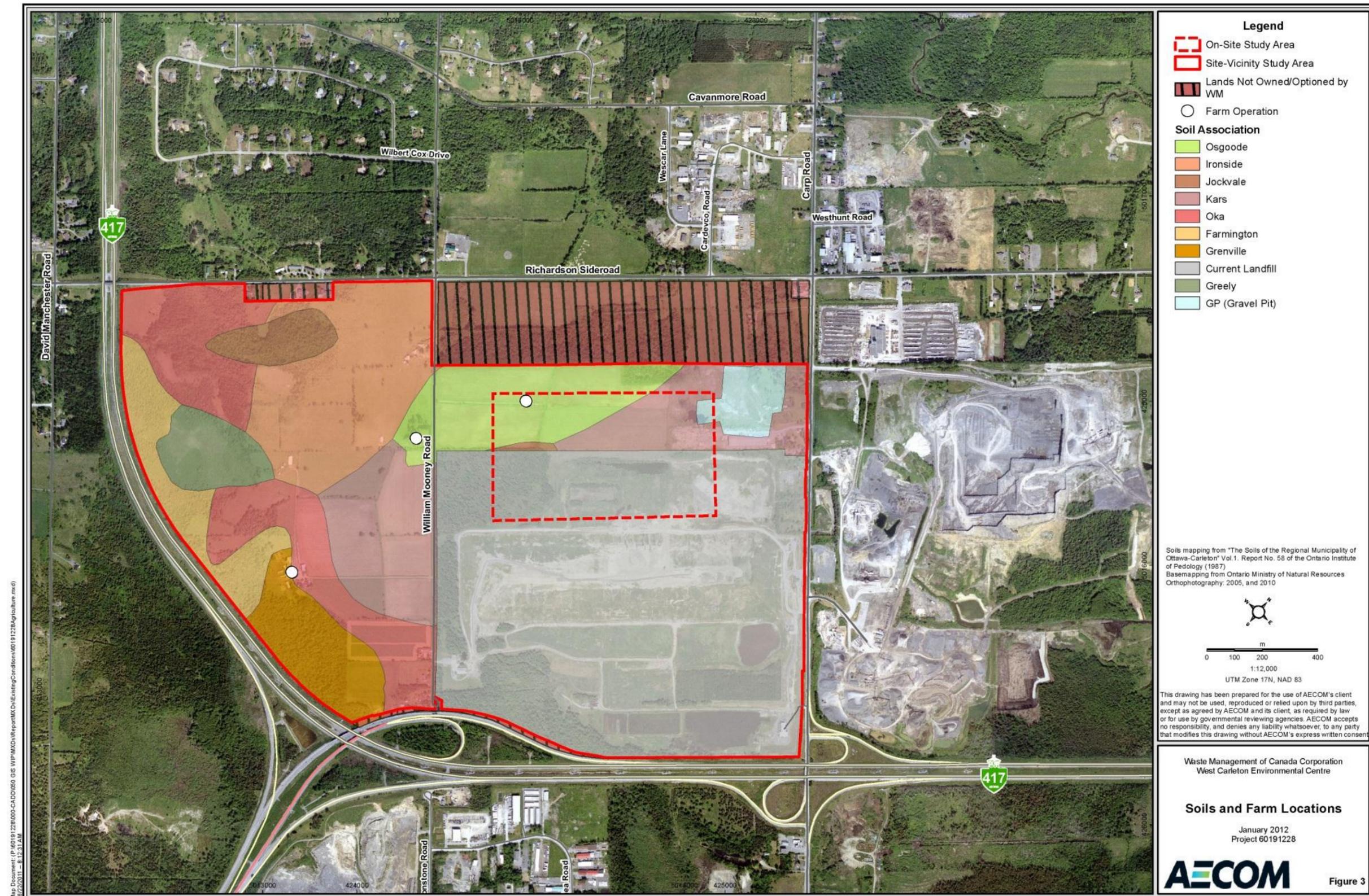


Figure 3. Soils and Farm Locations

6. Agriculture Net Effects

As mentioned, the previously identified potential effects and recommended mitigation or compensation measures associated with the Preferred Landfill Footprint were reviewed to ensure their accuracy in the context of the preliminary design of the Preferred Landfill Footprint. With this in mind, the confirmed potential effects, mitigation or compensation measures, and net effects are summarized in **Table 1** and described in further detail in the sections below. Displacement of agricultural land was the criterion selected to address agriculture issues with regard to the Alternative Landfill Footprint Options and the Preferred Landfill Footprint. The following three indicators were identified to characterize the nature of the impacts on agriculture: 1) current land use; 2) predicted impacts on surrounding agricultural operations; and 3) type(s) and proximity of agricultural operations (i.e., organic, cash crop, livestock) and intensive farm operations in the surrounding area.

6.1 Potential Effects on Agriculture

There are four cultivated fields totalling about 24 ha within the area bounded by William Mooney Road, the existing landfill, Carp Road, and the northern extent of the Site-Vicinity Study Area, half of which lies within the Preferred Landfill Footprint. These fields are owned by the dairy farmer on the west side of William Mooney Road and they produce feed for the farmer's dairy herd. Construction of the Preferred Landfill Footprint will result in the loss of this cropland to the dairy farm.

The dairy farm cropland located within the Preferred Landfill Footprint consists of roughly half Class 3 and half Class 4 agricultural capability soil. A strip of Class 3 soil between the Preferred Landfill Footprint and William Mooney Road, as well as a strip of land consisting of Class 3 and Class 4 soils along the north side of the Preferred Landfill Footprint, between there and the property boundary, will remain following construction of the Preferred Landfill Footprint. East of the cropland is an area of Class 4 soil and an old gravel pit, both of which are designated as Mineral Extraction areas on the Ottawa Zoning Map (Ottawa Comprehensive Zoning By-law 2008-250). The south part of the cropland is zoned as Rural Heavy Industrial, and the northern part is zoned as Rural General Industrial, as shown on the Ottawa Zoning Map.

6.2 Mitigation and/or Compensation Measures

Two compensation measures are available to address the loss of cropland to the dairy farm. One possibility is to purchase the entire dairy farm, including the cropland east of William Mooney Road, then re-sell or lease the land and buildings on the west side of William Mooney



Road. The second possibility is to purchase the cropland from the dairy farmer, who could in turn buy or lease other cropland to replace the portion sold, or contract his feed supply on an annual basis from other farmers.

6.3 Net Effects

The loss of the dairy farm’s cropland to the Preferred Landfill Footprint could conceivably result in the loss of the dairy farm, should the farmer decide to sell the rest of his land or retire. However; the location of the Preferred Landfill Footprint on the east side of William Mooney Road preserves the farm infrastructure on the west side of the road, including farm buildings, farm roads, fences and drainage systems on the dairy farm and the adjacent part-time beef farm. With the core of the dairy farm operation remaining intact, the additional feed requirements can be met elsewhere.

Table 1. Potential Effects, Proposed Mitigation and Compensation Measures, and Resulting Net Effects

Number/Indicator	Potential Effect	Mitigation/ Compensation	Net Effect
1. Current land use	<ul style="list-style-type: none"> Dairy farm loses most of cropland for production of feed for cattle. Loss of approximately 35.6 ha of Class 3 and 4 agricultural capability soil. Ottawa Comprehensive Zoning By-law shows area as “Rural General Industrial.” 	<ul style="list-style-type: none"> Purchase dairy farm, or dairy farm continues with new cropland elsewhere. 	<ul style="list-style-type: none"> Loss of dairy farm, or farm operation continues by sourcing cattle feed from new cropland elsewhere. Loss of approximately 35.6 ha of Class 3 and 4 agricultural capability soil. Ottawa Comprehensive Zoning By-law shows area as “Rural General Industrial.”
2. Predicted impacts on surrounding agricultural operations	<ul style="list-style-type: none"> No potential effects to other surrounding agricultural operations. 	<ul style="list-style-type: none"> Best Management Practices will be implemented by WM to ensure nuisance related effects are mitigated in relation to surrounding agricultural operations. 	<ul style="list-style-type: none"> No impacts on surrounding agricultural operations.
3. Type(s) and proximity of agricultural operations (i.e., organic, cash crop, livestock) and intensive farm operations in surrounding area.	<ul style="list-style-type: none"> Existing farm operations in proximity to the proposed landfill footprint will continue to operate. 	<ul style="list-style-type: none"> No mitigation measures required. 	<ul style="list-style-type: none"> Existing farm operations in proximity to the proposed landfill footprint will continue to operate.



7. Impact Analysis of Other WCEC Facilities

The other WCEC facilities do not appear to present any potential negative impacts on Agriculture in the area.

8. Monitoring and Commitments for the Undertaking

To ensure that the mitigation measures identified in **Section 6** are implemented as envisioned, a strategy and schedule was developed for monitoring environmental effects. With these mitigation or compensation measures and monitoring requirements in mind, commitments have also been proposed for ensuring that they are carried out as part of the construction, operation, and maintenance of the landfill.

8.1 Monitoring Strategy and Schedule

As mentioned, a monitoring strategy and schedule was developed based on the Agriculture Impact Assessment carried out for the Preferred Alternative Landfill Footprint to ensure that: 1) predicted net negative effects are not exceeded; 2) unexpected negative effects are addressed; and 3) predicted benefits are realized.

8.1.1 Environmental Effects Monitoring

Best Management Practices (BMPs) will be implemented by WM to ensure that nuisance related effects are mitigated in relation to surrounding agricultural operations. The BMPs that have been implemented for the existing landfill appear to be working successfully, therefore WM will build on these same practices for the new site.

8.1.2 Development of an Environmental Management Plan

An Environmental Management Plan (EMP) or Plans will be prepared following approval of the undertaking by the Minister of the Environment and prior to construction. The EMP will include a description of the proposed mitigation measures, commitments, and monitoring.



8.2 Commitments

The following commitments have been proposed for ensuring that the identified mitigation or compensation measures and monitoring requirements are carried out as part of the construction, operation, and maintenance of the undertaking:

- a) Develop a WM program of BMPs to deal with nuisances caused by WCEC operations and affecting farmers and other property owners. This program should be explained in detail to those potentially affected.

9. Agriculture Approvals Required for the Undertaking

No approvals are anticipated to be required by the City of Ottawa to remove the existing agricultural use from the Preferred Landfill Footprint. The current Official Plan designation of the lands target future industrial and commercial uses, not agricultural uses. The City is undertaking a Rural Review Process which includes updates to the Land Evaluation and Area Review (LEAR) system. This review may result in the reclassification of agricultural lands in Ottawa, and thus inclusions/exclusions of lands in the Agricultural Resource Area designation in the Official Plan. One of the objectives is to obtain new and better information to preserve prime agricultural land (Canada Land Inventory Class 1 to 3 soils) for agriculture, utilizing an improved LEAR land evaluation system. Once a decision has been reached regarding a preferred LEAR model, the results of the mapped model will be ground-truthed in the spring of 2012. At the very earliest, the proposed model would go to Committee and Council in the second quarter of 2012.

While the Preferred Landfill Footprint is located partly on Class 3 Osgoode soil, it is unlikely to be an issue for the following reasons:

- a) The Preferred Landfill Footprint is located within the Carp Road Corridor which was created to encourage economic development and job creation;
- b) The Class 3 land in the Carp Road Corridor south of the Richardson Side Road is already zoned as 'Rural General/Heavy Industrial', which makes Agriculture a non-conforming use;
- c) The area of Class 3 land is isolated from other larger areas of prime agricultural land, and it is too small by itself to sustain a modern commercial farm operation.



It appears that the only approval required for the undertaking related to Agriculture is that of the EA by the Ontario Ministry of Environment.

Report Prepared By:



Bill Graham, Dip. A gr., B.Sc. (Agr), P.Ag.,
Agriculture Consultant



10. References

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