



WASTE CONNECTIONS OF CANADA

Ridge Landfill Expansion: Agricultural Impact Assessment

Appendix D1

DRAFT



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ACRONYMS, ABBREVIATIONS, DEFINITIONS

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A Table Summary of Agricultural Operations

Acronyms, Abbreviations, Definitions

Act (the), refers to the Environmental Assessment Act. Also known as EAA, or the EA Act.

EA, Environmental Assessment, means an environmental assessment process described in Part II of the EAA and/or report submitted pursuant to subsection 5(1) of the EAA¹.

ECA, Environmental Compliance Approval is a license or permit issued by the Ministry of the Environment, Conservation and Parks for the operation of a waste management facility or site.

Haul Route, this area refers to the right-of-way of the designated truck haul route to the landfill. Traffic to the landfill travel from Highway 401 via interchange 90, heading southeast along Communication Road (County Road 11), to Drury Line then along Erieau Road to the main site entrance of the landfill at 20262 Erieau Road.

IC&I, Industrial, Commercial and Institutional.

MECP, Ministry of the Environment, Conservation and Parks; formerly Ministry of the Environment and Climate Change (MOECC), Ministry of the Environment (MOE), and Ministry of the Environment and Energy (MOEE).

MTO, Ministry of Transportation Ontario.

OMMAH, Ontario Ministry of Municipal Affairs and Housing.

Off-site Study Area, this generally refers to the area outside of the Ridge Landfill site boundary (also referred to as “off-site”).

On-site Study Area, this refers to the study area within the Ridge Landfill site boundary (also referred to as “on-site”).

PPS, Provincial Policy Statement, 2014.

ToR, Terms of Reference.

¹ MECP, Environmental Assessment Act, 1990

Waste Connections of Canada Inc., or “Waste Connections”, is the proponent for this Undertaking. Waste Connections was formerly Progressive Waste Solutions Canada Inc. Progressive Waste Solutions and Waste Connections merged in an all-stock transaction as of June 1, 2016.

Units	
ha	hectare
km	kilometre
L	litre
m	metre
m³	Cubic metres
masl	metres above sea level

Executive Summary

An Agricultural Impact Assessment has been undertaken in support of the Environmental Assessment initiated by Waste Connections of Canada Inc. (Waste Connections) to expand its Ridge Landfill site in the Municipality of Chatham-Kent. The overall goals of the Agricultural Impact Assessment for the proposed landfill expansion is to provide an analysis of the potential effects related to the agricultural environment, followed by the development of mitigative measures to protect and preserve agricultural resources.

All three (3) agricultural study areas, on-site, off-site and the haul route contain or are adjacent to Prime Agricultural land. Crops that are often grown regionally include soybean, field corn, winter wheat, mixed grains, canola, and other crops.

On-site:

The dominant soil in the on-site study area is a Brookston clay which has slow internal and external drainage that limits its use to pasture, hay and some cereals. Soils in the on-site study area are Class 2 with a limitation of excess water, which means the land typically experiences flooding in the spring or after storm events throughout the summer. A network of tile drains in the Municipality has enabled many operations to grow common field crops.

The agricultural usage of the on-site area was determined by conducting field reconnaissance of the study area. Waste Connections owns all of the land in question, with those lands that are still in agricultural production being leased or rented out to local tenant farmers. The agricultural crops on-site was soybean as observed being grown in 2017, along with one (1) apple orchard, considered a fruit crop, being located at the southeast side of the site.

Farm infrastructure within the on-site study area included: one (1) barn, two (2) concrete silos, and three (3) drivesheds along Allison Line and one (1) barn in the northwest corner on Charing Cross Road. These structures are unused, in poor condition and not used for agricultural purposes. The barns on-site have been identified as built heritage resources².

² Stantec Consulting Ltd., *Ridge Landfill Expansion EA: Heritage Impact Assessment*, March 2019.

Off-Site:

Inspection of the off-site study area by field reconnaissance, review of farm surveys and examination of agricultural land use systems maps, identified cash cropping as the majority of farming operations. The dominant crop grown in the area was soybean, followed by corn, grain, pasture/hay and fruit crops. Some fields were also fallow.

Haul Route:

Crops grown along the haul route included mostly soybean, corn, mixed grain, and hay. One (1) large greenhouse operation is located on Communication Road between Cundle Line and Burk Line. This family-owned operation grows hydroponic sweet peppers. There are approximately 15 farms (identified by the presence of infrastructure buildings) and approximately 46 designated field entrances that have direct access to the haul route. Most of the fields were at-grade with the road and many did not have designated field entrances; many of the fields could be accessed at any point along the field frontage.

All of the secondary rural roads within the off-site study area that were examined had low traffic volumes and no issues with accidents or safety.

Net Effects:

On-site effects relate to the loss of agricultural lands, and displacement of agricultural resources within the site boundary. On-site farm operators that will be displaced are tenants with short-term leases, who can continue to farm until the land is needed for landfilling purposes. For this reason, the on-site agricultural effects are minimal.

The operation of a landfill may also have negative impacts on the surrounding agricultural community. Some effects such as dust and litter may interfere with crop pest management activities, and have potential to cause animal health concerns and cultivation problems. These, in turn, can create economic losses and frustration on the part of farmers who work these areas.

Dust and odour controls are already in place with existing operations, and will continue throughout the expansion period. No increase to impacts on agricultural production is expected. Overall, the off-site impacts are expected to be minimal or can be mitigated.

In summary, based on the information gathered, the viewpoints of farmers at public meetings and from surveys, it would appear that the effects of truck speed is the key concern to be addressed for safety reasons. These concerns will continue to be addressed through dialogue

between Waste Connections, the public and the third-party hauling companies that use the landfill site.

Mitigative Measures:

On-site, Waste Connections intends to mitigate the impact of converting the farmed land to landfill by allowing the farm operations to continue until the time when the land will be used for waste disposal.

Off-site, to mitigate the impact of blowing litter, waste is and will continue to be covered daily, and a high perimeter fence will be installed downwind of the predominant wind direction at the working area boundary of the landfill. In addition temporary litter fences will continue to be used to control blowing litter at the active landfill face. To further reduce the potential effects of litter on adjacent farm fields, regular off-site patrols near neighbouring properties will continue to be conducted. The landfill has a litter control plan for high wind conditions and this plan will continue to be used and updated regularly by Waste Connections.

For the haul route, the mitigation of effects recommended for waste related vehicles includes the continued implementation of truck driver safety training and compliance with the posted speed limit.

Conclusion:

In conclusion, this assessment provided an analysis of the potential landfill-related impacts to the agricultural environment from the continued operation of the site until 2041. The haul route will remain the same, the landfill operations will continue in a similar method as today, and the number of trucks arriving at the landfill daily is not anticipated to change. For these reasons, the conclusion reached is that the effects on the agricultural environment from landfill expansion are expected to be minimal from the Ridge Landfill operations to the year 2041 and that current on-going mitigation will continue to address any impacts

1.0 Introduction

Waste Connections of Canada Inc. (Waste Connections) has undertaken an Environmental Assessment pursuant to the *Environmental Assessment Act* (EA Act) to expand its Ridge Landfill site in the Municipality of Chatham-Kent in accordance with the Amended Terms of Reference (ToR), approved by Ontario's Minister of the Environment, Conservation and Parks (MECP) on May 1, 2018; to continue to provide long-term disposal capacity to serve the growing population and economy of the province of Ontario.

The Ridge Landfill has been in operation since 1966 and was expanded in 1999. The landfill is located at 20262 Erieau Road near Blenheim, Ontario in the Municipality of Chatham-Kent, and is operated by Waste Connections (**FIGURE D1-1**). The site is currently approved to receive waste from the industrial, commercial and institutional (IC&I) sectors in Ontario, and residential waste from the Municipality of Chatham-Kent and the surrounding Counties of Essex, Lambton, Middlesex and Elgin.

FIGURE D1-1: LOCATION OF RIDGE LANDFILL



The Landfill Site Area of 262 ha, is permitted by the Environmental Compliance Approval (ECA) from the MECP for waste management and environmental work purposes. The area within which waste disposal is permitted, called the Approved Waste Disposal Area, is 131 ha or half of the Landfill Site Area. The current approved capacity for the Ridge Landfill is 21 million cubic metres (m³). As per the current ECA for the Ridge Landfill, the annual fill rate at the Ridge Landfill is 1.3 million tonnes.

As of April 2019, it is estimated that the existing Waste Disposal Area at the Ridge Landfill site will provide waste disposal capacity until approximately 2021 at the current fill rate. The expansion would increase the lifespan of the Ridge Landfill beyond 2021 to 2041. The landfill expansion will not result in an increase in annual waste volumes disposed at the site.

1.1 Work Plans

Work plans were prepared for each impact assessment study. The agricultural work plan was prepared September 2018.

The work plans were circulated to interested stakeholders, key government reviewers, and Indigenous Communities and Organizations who desired to review them; and they were posted on the Future Plans page of the Ridge Landfill website for public review and comment. The input received during that review has been carefully considered and incorporated into this study, where applicable.

1.2 Role of the Agriculture Discipline in the Environmental Assessment

In this impact assessment of the proposed Ridge Landfill expansion, the analysis focused on the predicted net environmental effects which the operating landfill may have on agricultural related uses on-site, off-site (within 1 km of the maximum fill area) and along the haul route.

According to the 2014 Provincial Policy Statement “Agricultural-related uses” are defined as *“those farm related commercial and farm-related industrial uses that are directly related to farm operations in the area, support agriculture, benefit from being in close proximity to farm operations, and provide direct products and/or services to farm operations as a primary activity”*.³

³ Ministry of Municipal Affairs & Housing, *Provincial Policy Statements*, 2014.

Agricultural resources include the land base (i.e., soil capability for producing crops, land in agricultural production), farm-related infrastructure and farm operations.

The objectives of this Agricultural Impact Assessment are as follows:

- To identify the loss of agricultural resources and disturbance (if any) that may as a result of the proposed landfill expansion and operation;
- To describe the agricultural conditions within the off-site study area;
- To describe the agricultural conditions along the haul route;
- To identify off-site agricultural operations where nuisance effects are possible and predict the net effects;
- To assess the overall significance of the anticipated net effects;
- To recommend proposed mitigation measures on-site and along the waste haul route;
- To identify specific off-site mitigation measures to eliminate/reduce impacts; and
- To identify and develop monitoring programs and contingency measures where necessary.

It is important to note some potential impacts associated with agricultural resources and activities are also addressed by other disciplines including socio-economic, and transportation. The Socio-Economic Impact Assessment addresses the potential for perceived disruption to farm families within the rural community, and considers among other things, potential impacts to the local economy including those resulting from displaced farm businesses. The Transportation Impact Assessment⁴ addresses the potential impacts that truck traffic along the haul route has, and is expected to continue to have on overall local traffic (including farm related equipment).

1.3 Scope of Assessment

The guidelines and policies reviewed for this report include the following:

⁴ Dillon Consulting Limited, Transportation Impact Assessment Report, July 2019.

- Ministry of Environment and Climate Change Guideline D4 Land Use On or Near Landfills and Dumps (1995; accessed 2018);
- Ministry of Environment and Climate Change Guidelines D1 Land Use Compatibility Guidelines (1995; accessed 2018);
- 2014 Provincial Policy Statement (OMMAH, 2014) [specifically **Sections, 1.6.10.1** (Waste Management); and 2.3.1 to 2.3.6 (Agricultural related policies)]; and,
- Chatham-Kent Official Plan (specifically **Sections 2.4.12** [Ridge Landfill]; and 3.10 [Agricultural Area Policies]).

As a result of these policies, agricultural resources and activities should be protected, where possible, since adverse effects on agricultural lands can lead to economic losses and a reduction in quality of a non-renewable resource.

Landfill facilities typically require large areas of relatively level land with a clay type soil (i.e., with low permeability). However, clay soils that have good drainage, are flat and relatively stone-free are also in high demand for common field crops such as soybean, winter wheat, mixed grain, and corn as they produce good yields. Such soils are also favoured for fruit crops such as tender fruits, orchard crops, and vegetables. Therefore, it is important that a landfill location and sizing minimizes the loss of lands that are agriculturally viable, where possible.

The operation of a landfill may also have negative impacts on the surrounding agricultural community. Some effects such as dust and litter may interfere with crop pest management activities, and have potential to cause animal health concerns and cultivation problems. These, in turn, can create economic losses and frustration on the part of farmers who work these areas.

The haul route may also be considered a nuisance and safety concern to the farm community especially for those farmers who transport large and wide equipment along the haul route or have farm entrances or field entrances along the route. This has the potential to create conflict between haul trucks and slow moving farm vehicles.

The scope of this assessment is to examine the potential impacts of the proposed expansion of the Ridge Landfill on: on-site agricultural resources and activities; off-site agricultural resources and activities (particularly those that are closer to the landfill); and those operations and agricultural lands situated along the haul route.

1.4 Overview of Report Contents

This report describes the baseline agricultural environment in the area surrounding the Ridge Landfill site and potential changes to the future agricultural environment due to the proposed landfill expansion. The report consists of the following:

- **Section 1** presents an introduction to the study, a description of the site, and the role and scope of the Agricultural Impact Assessment;
- **Section 2** describes the study methods to this assessment including: study areas, criteria and indicators, data collection and method analysis;
- **Section 3** provides a description of the existing agricultural environment;
- **Section 4** provides a description of the future agricultural environment;
- **Section 5** provides an assessment of the potential effects of the proposed landfill expansion on the agricultural environment;
- **Section 6** presents mitigative measures;
- **Section 7** summarizes major conclusions of the agricultural impact assessment; and
- **Appendix D1-A** provides information that supports the agricultural impact assessment.

2.0 Methods of Assessment

2.1 Study Areas

The term "study area" refers to those areas for which data was collected and the impact analysis was carried out. Three (3) study areas (see **FIGURE D1-2**) were examined for the agriculture impact assessment. These are:

- **on-site** - consists of the area within the Ridge Landfill site boundary.
- **off-site** - consists of the area that is one (1) km outside of the Ridge Landfill site boundary.
- **Haul route** - this area refers to the designated truck haul route to the landfill. Traffic to the landfill that originates from Highway 401, travels southeast along Communication Road (County Road 11) after exiting Highway 401 at Interchange 90, to Drury Line then along Erieau Road to the main site entrance (**FIGURE D1-2**).

FIGURE D1-2: AGRICULTURAL STUDY AREAS



RIDGE LANDFILL ENVIRONMENTAL ASSESSMENT

AGRICULTURAL STUDY AREAS

- Haul Route Study Area
- On-Site Agricultural Study Area & Property Boundary
- - - Off-Site Agricultural Study Area
- Preferred Alternative Waste Limit

1:19,000
0 180 360 720 m



MAP DRAWING INFORMATION:
DATA OBTAINED FROM MAPRP

MAP CREATED BY: GSI
MAP CHECKED BY: MS
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 152456
STATUS: FINAL
DATE: 2019-06-04

2.2 Assessment Criteria

The Agricultural Impact Assessment criteria are:

- Assess potential for loss or removal of agriculture **on-site**.
- Assess potential for disruption of agriculture **off-site**.
- Assess potential for disruption of farm operations **along the haul route**.

A description of the criteria, indicators, their rationale and data sources are shown in **Table D1-1**.

Table D1-1: Impact Assessment Criteria and Indicators

Criteria	Indicator	Rationale	Data Source
Assess potential for impacts to agricultural resources.	Area of Canada Land Inventory (CLI) Class 1-3 Lands removed.	Under the Planning Act, Class 1 to 3 soils that are designated agricultural are considered Prime Agricultural lands and should be preserved for future agricultural usage.	<ul style="list-style-type: none"> Field observations. Top Soil Maps. Soil Capability mapping. Official Plan and policies.
	Changes required to tile drainage/surface ditches.	Tiles and drainage ditches represent an investment in land improvements to improve soil productivity.	<ul style="list-style-type: none"> Field observations. Top Soil Maps. OMAFRA drainage mapping. Preliminary Design and Operations Report.
	Area of crop production lost or disrupted within the off-site study area.	Identifies the amount of land in use for agricultural production (e.g., common field crops/orchards/fallow) that will be removed by the facility; and the potential for nuisance impacts to cause economic losses and frustration to off-site farmers.	<ul style="list-style-type: none"> Field observations. Agency and key contacts. Transportation Assessment. Socio-economic Assessment.
	Number and type of farm infrastructure impacted.	Identifies the number of active farm infrastructure which shows long term capital investment.	<ul style="list-style-type: none"> Field observations. Cultural Heritage Assessment. Agency and key contacts.

Assess potential for impacts to farm operations along the haul route.	Number of livestock infrastructure within the off-site study area.	Identifies the number of active farm infrastructure. Such infrastructure which are used for animal housing are considered sensitive.	<ul style="list-style-type: none"> • Farm operator Interviews. • Field observations.
	Number of farm building complexes with direct access to haul route.	Indicates the number of ingress/egress points to farm building complexes where interference is most likely for farm operations along the haul route.	<ul style="list-style-type: none"> • Roadside survey.
	Number of field entrances with direct access to haul route.	Indicates the number of ingress/egress points to farm fields where conflict could occur between slow moving farm machinery and haul trucks.	<ul style="list-style-type: none"> • Field observations. • Farm operator Interviews.
	Number and extent of agricultural businesses impacted and number of employees for each.	The expansion will result in the permanent loss of agricultural lands.	<ul style="list-style-type: none"> • Socio-economic Interviews. • GIS mapping. • Agricultural Assessment.
Loss of agricultural employment.			

2.3 Data Collection

Data for the Agricultural Impact Assessment included a review of the following secondary data sources:

- Assessment data mapping for the study area;
- Capability mapping for agricultural soils - 1994;
- Artificial Drainage System mapping - Raleigh Township (South Half) September 1982 and Harwich Township (South Half) October 1982; Ontario Ministry of Agriculture and Rural Affairs, AgMaps. Accessed March 2018.
- Soil Survey of Kent County (2012);
- Agricultural Land Use mapping (1:50,000), Raleigh Township and Harwich Township; and
- Colour aerial photography, flown May 16, 2016.

Additional data for updates to this report have been obtained from the following sources:

Farm operator surveys: These surveys were administered by the Socio-economic discipline specialists and included some agricultural operations within on-site and off-site study areas. All responses regarding agriculturally related questions were returned to the Agriculture discipline specialist for review and analysis.

Reconnaissance: Trips to the study area occurred on December 9, 2016; April 12, 2017; and June 22, 2017, to conduct field work on-site, off-site, and along the haul route as roadside observations. This work included roadside inspection and mapping of all fields for crop type, and evidence of agricultural tile drainage adjacent to road side ditches.

Transportation Impact Assessment⁵: The Transportation Impact Assessment details the predicted net environmental effects which the operating landfill may have on transportation resources along the haul route, and to the regional roads and linkage to the provincial highway.

⁵ Dillon Consulting Limited, *Ridge Landfill Expansion EA: Transportation Impact Assessment*, July 2019

2.4 Methods of Analysis

Land in agricultural production within the on-site and off-site study areas was determined by field observations from publicly accessible areas on April 12, 2017, before plowing of fall stubble. This gave a good indication of which fields had been planted with soybean and corn in 2016 or had been planted with winter wheat for the 2017 cropping season. These crops are common field crops typically grown on Class 2 to 3 land. Agricultural features along the haul route were determined by slowly driving along the route, noting the location of farm driveways and field entrances, and marking these on aerial photography. The estimated areas of crop production, to address the criteria and indicators in **Table D1-1** were based on the observed agricultural areas within the study areas, recorded on a 1:10,000 base map and then digitized to calculate the land areas.

Information that addressed the on-site indicators soil capability and extent of tile drainage or ditch construction was obtained from soil capability⁶ and drainage mapping⁷, along with field checks to confirm that lands were in production and that evidence of drainage improvements existed (e.g., the presence of outlets). The number and type of farm infrastructure was determined by walking or driving through the area and recording the crop or farm building type.

2.5 Study Period

The time horizon for the agriculture impact assessment includes the operating life of the facility, assumed to be from 2021 to 2041. This time horizon for the Agricultural Impact Assessment relates to the anticipated future conditions for agricultural resources and existing farm operations in close proximity (i.e., nuisance impact zone) to the landfill site. It also relates to those agricultural operations with direct access to the haul route.

⁶ Wilson, E.A. *Soil Maps of Kent County*. Ontario Centre for Soil Resource Evaluation, OMAFRA, 1994.

⁷ Ontario Ministry of Agriculture, Food and Rural Affairs, *AgMaps – Geographic Portal*, 2018.

3.0 Existing Environment

This section provides a description of the existing agricultural conditions at the Ridge Landfill (i.e., on-site expansion area), off-site and along the haul route. In terms of a regional description, all three (3) study areas are Class 2 agricultural lands as denoted on Canada Land Inventory mapping, and Class 3 lands in the vicinity of Highway 401⁸. Crops that are often grown in southern Ontario, particularly in Chatham-Kent include: soybean, field corn, winter wheat, mixed grains, canola and other crops. Other occasional crops such as orchards (i.e., apples, pears, cherries etc.), are found southeast of the study areas.

Agricultural Census figures for Chatham-Kent lists a total of 2,129.09 km² versus the total municipal land area of 2,470.52 km² in 2016.⁹ This equates to 86% of land area in the Municipality of Chatham-Kent being agricultural in nature. Chatham-Kent's agricultural land area represents 5.37% of the total Ontario agricultural land area.

The Ontario Soybean Growers Marketing Board and local seed mills indicated¹⁰ many of the soybean producers in Kent County, including the Blenheim area, have contracts with local seed mills (who hold the patents on these seeds) to grow fruit soybeans for the Pacific Rim market. These fruit soybeans, also called Special Quality White Hilum (SQWH), are grown for the human food market and are used to make products such as Tofu and Natto. These beans have a higher cash value than other soybean varieties.

The yields of corn, soybean, and winter wheat in the on-site, off-site and haul route study areas, based on farm operator surveys, were similar to the Chatham-Kent averages¹¹, shown in **Table D1-2**.

⁸ Wilson, E.A. OMAFRA. *Soil Maps of Kent County*. Ontario Centre for Soil Resource Evaluation, 1994.

⁹ Statistics Canada. *Agricultural Census for Chatham-Kent*, 2016.

¹⁰ Ontario Soybean Growers Marketing Board (OSGMB), personal communication, 2017.

¹¹ Dillon Consulting Limited, fieldwork; 2017.

Table D1-2: Yields of Crops in Study Areas (on-site and off-site)

Crop	Average Yield in Study Area¹²	Average Yield in Chatham-Kent in 2018¹³
Soybean	51.2 bu/ac	50.2 bu/ac
Grain corn	167.5 bu/ac	182.4 bu/ac
Winter wheat	83.5 bu/ac	95.9 bu/ac
Hay	not available	4.7 tons/ac
Fallow	N/A	N/A
Fruit	not available	not available

3.1 On-Site Study Area

Agricultural characteristics in the on-site study area were examined, including soil type, soil capability for agricultural production, ground surface drainage and agricultural usage. The following subsections describe these components individually.

3.1.1 On-Site Agricultural Soils, Capability and Drainage

The dominant soil in the on-site area is a Brookston clay. This soil is composed of 20 cm of very dark brown clay, which has a medium granular structure and becomes very sticky when wet. Typically, there are very few stones in this soil, and it is high in organic matter¹⁴. In its unimproved state, Brookston clay has slow internal and external drainage which limits its use to pasture, hay and some cereals. However, when tile drainage is installed, the productivity of this soil is improved, and many crops including some fruit crops can be grown. It should also be noted for those fields where soybeans are grown, the use of a rock-picker is required to ensure a smooth seed bed is available for seeding and harvesting. On the southern edge of the on-site area, a small pocket of Brookston loam exists. This soil phase has a loamy surface texture which ranges in depth from 15-40 cm¹⁵.

¹² Dillon Consulting Ltd, interview surveys conducted, Nov 5 through Dec 5, 2018.

¹³ Statistics Canada, Census of Agriculture, 1991.

¹⁴ Matthews, B.C., Richards, N.R. and Wichlund, R.E. *Soil survey of Lambton County*, 1957.

¹⁵ Wilson, E.A. *Soil Maps of Kent County*. Ontario Centre for Soil Resource Evaluation, OMAFRA, 1994

A review of Canada Land Inventory mapping indicates the soils in the on-site area are Class 2 with a limitation of excess water, which means the land typically experiences flooding in the spring or after storm events throughout the summer. A network of tile drains in the municipality has enabled many operations to grow common field crops (**FIGURE D1-3**).

Field reconnaissance and a review of artificial drainage system (ADS) mapping¹⁶ indicate the majority of lands, within the on-site area, have been improved by surface drainage (see **FIGURE D1-3**). With the exception of the woodlots, the entire on-site area is drained with a tile drain network. Agricultural surface water and tile drainage flow is removed via the Howard, Duke, Scott and Lewis Drains.

3.1.2 On-Site Agricultural Usage (Crop Production and Farm Infrastructure)

The agricultural usage of the on-site area was determined by conducting field reconnaissance of the study area on three separate occasions, December 9, 2016, April 12, 2017 and June 22, 2017 (see **FIGURE D1-4**). Waste Connections owns or controls all of the land within the on-site study area, with those lands that are still in agricultural production being leased or rented to local tenant farmers. The agricultural crop on-site was soybean as observed being grown in 2017, along with one (1) apple orchard (est. 9,000 trees of mix of varieties such as Honey Crisp, Gala, Empire and McIntosh), considered a fruit crop, being located to the east of the site entrance. Fruit crops such as the orchard on-site and in adjacent areas are not considered “Specialty Crops” as defined by the Ministry of Agriculture, Food and Rural Affairs (OMAFRA)¹⁷.

Soybean is a high value crop that requires a well-drained, flat, smooth soil with minimal to no rocks. According to the Chatham-Kent profile¹⁸, Chatham-Kent grew 7.3% of the province’s soybean crop which was approximately 90,379 ha. Other field crops included grain corn (55,887 ha) and winter wheat (24,035 ha)¹⁹.

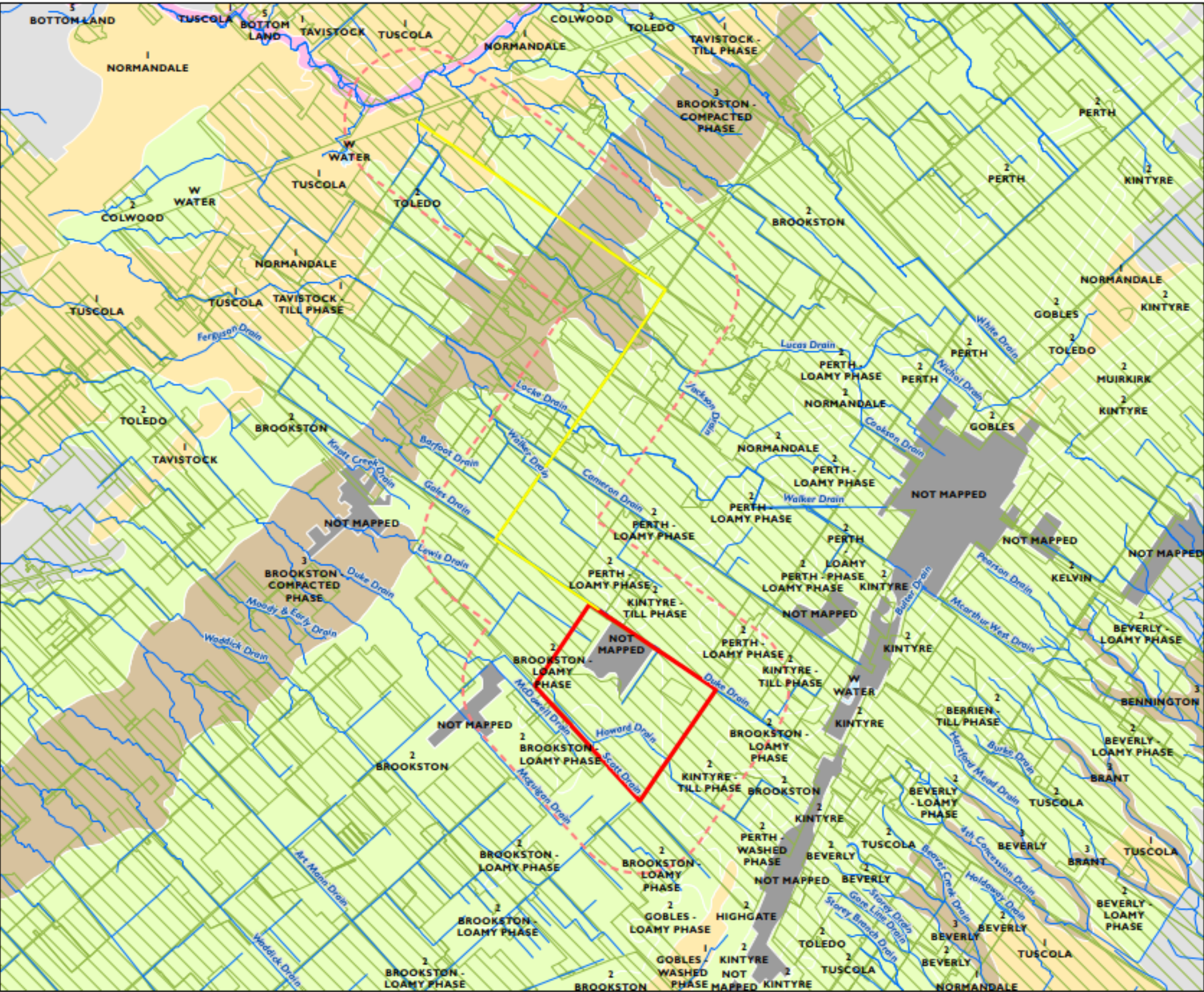
¹⁶ OMAFRA, *Artificial Drainage Systems*, 2018

¹⁷ Specialty crops= apiculture, agroforestry, ginseng, greenhouses, hemp, herbs, hops, nursery/landscape, tobacco, turf.

¹⁸ Statistics Canada, *Agricultural Division report for Chatham-Kent*, 2017.

¹⁹ OMAFRA, Statistics of field crops. <http://www.omafra.gov.on.ca/english/stats/crops/index.html>, 2019.

FIGURE D1-3: OVERVIEW OF TILE DRAINAGE AND CANADA LAND INVENTORY CLASSIFICATION IN CHATHAM-KENT



RIDGE LANDFILL ENVIRONMENTAL ASSESSMENT

OVERVIEW OF TILE DRAINAGE AND CANADA LAND INVENTORY CLASSIFICATION IN CHATHAM-KENT

- Haul Route Study Area
- On-Site Agricultural Study Area & Property Boundary
- Off-Site Agricultural Study Area
- Constructed Drain
- Agricultural Tile Drainage

Soil Survey Complex (Canada Land Inventory)

- Class 1
- Class 2
- Class 3
- Class 5
- W
- Not Mapped

1:51,724
0 1000 400 m

MAP DRAWING INFORMATION:
IMAGERY PROVIDED BY DIGITAL GLOBE;
DATA OBTAINED FROM MURP

MAP CREATED BY: DM
MAP CHECKED BY: MB
MAP PROJECTION: NAD 1983 UTM Zone 17N

PROJECT: 152456
STATUS: FINAL
DATE: 2019-06-04

FIGURE D1-4: AGRICULTURAL LAND USE



Farm infrastructure within the on-site study area included: one (1) barn, two (2) concrete silos, and three (3) drivesheds along Allison Line and one (1) barn in the northwest corner on Charing Cross Road. These structures are unused, in poor condition and not used for agricultural purposes. There had previously been another barn at 20011 Charing Cross Road, however due to advanced deterioration and safety concerns it was dismantled. The barns that remain standing have been identified as built heritage resources²⁰.

3.2 Off-Site Study Area

Agricultural characteristics in the off-site study area that were assessed included: soil type, soil capability for agricultural production, ground surface drainage and agricultural usage. The following subsections describe these components individually.

3.2.1 Off-Site Agricultural Soils, Capability and Drainage

The dominant soil in the off-site area is Brookston clay similar to the on-site study area (see **Section 3.1.1** for a full description of this type of soil). The other soil types that exist in the off-site study area were as follows:

- **Perth Loamy Phase** – A depth of ten (10) cm of this soil type was found northeast and southeast of the existing landfill, composed of a dark-hued clay. The natural fertility of this soil is fair and the addition of drainage improvements would produce good yields of corn, soybeans, and winter wheat²¹.
- **Kintyre Till Phase**²² – This soil type is located immediately east of the existing landfill facility. Kintyre soils have a 40-100 cm veneer of coarse-textured lacustrine materials, which are underlain by gravelly coarse-textured lacustrine beach materials. Kintyre soils drain rapidly and are permeable.

The top layers of Kintyre soils usually have sandy loam, fine sandy loam or loamy fine sand textures. The upper layers are clay enriched and sit on a coarser textured, gravelly

²⁰ Stantec Consulting Ltd., *Ridge Landfill Expansion EA: Heritage Impact Assessment*, March 2019.

²¹ Matthews, et al., B.C., Richards, N.R. and Wichlund, R.E. 1957, *Soil survey of Lambton County*, 1957.

²² Schut, L. *The Soils of Elgin County: Report No.63 of the Ontario Centre for Soil Resources Evaluation*. Ontario Ministry of Agriculture and Food, and Research Branch, Agriculture Canada, 1992.

coarse sand or gravelly loam, with a coarse sand texture. Kintyre soils are highly suitable for many fruit crops providing that supplemental irrigation is supplied.

A review of Canada Land Inventory²³ mapping indicated that the soils in the study area are Class 2 with a limitation of excess water, meaning it typically experiences flooding in the spring or after storm events throughout the summer (**FIGURE D1-3**). All lands within the off-site area, east of Charing Cross Road are drained with a network of municipal drains that remove water via gravity. A summary of these drainage improvements are as follows²⁴:

- **Duke Drain** – Located along Erieau Road, it drains to the northwest, and then through the on-site area, and empties into the Howard Drain located immediately southwest of the existing site boundary.
- **Howard Drain** – This drain flows west near the midpoint of Allison Line, continues west along Charing Cross Road (County Road 10) where it picks up drainage from the Duke Drain west of the site. The portion of this on-site drain is proposed to be relocated.
- **Lewis Drain**– Originates west of the site and drains land between Erieau Road and Charing Cross Road.
- **Scott Drain**– Runs parallel to Charing Cross Road, draining land immediately south of Charing Cross Road.
- **Gales Drain**– This drain runs parallel to Erieau Road, and drains land west of Erieau Road in the vicinity of the site entrance.

The land west of County Road 10, but within the off-site study area, has limited systematic drainage, with only one major municipally-owned drain, namely the McDowell Drain that runs parallel to County Road 10.

²³ Canada Land Inventory, National Soil DataBase, Agriculture and Agri-Food Canada. 1998.

²⁴ Dillon, Field observations, 2017.

3.2.2 Off-Site Major Agricultural Uses

Inspection of the off-site study area by field reconnaissance, review of farm surveys and examination of agricultural land use systems maps²⁵, identified cash cropping as the majority of farming operations. Other uses include beef feedlot, swine, horse, and fruit crops. As indicated in **Table D1-3** below, the dominant crop grown in the area was soybean, followed by corn, grain, pasture/hay and fruit crops. Some fields were also fallow.

Table D1-3: Crop Area Presently Being Grown in Off-site Area²⁶

Crop	Off-Site Area		%
	(ha)	(ac)	
Corn	287.27	709.86	29.8
Fallow	44.50	109.96	4.6
Pasture	23.64	58.41	2.5
Soybean	455.00	1124.33	47.2
Winter Wheat	136.50	337.30	14.2
Fruit	16.39	40.50	1.7
Totals	963.30	2,380.36	100.0

According to the Chatham-Kent Official Plan²⁷, “*Specialty Crop Areas (SCA) will be identified and be supportive of the agricultural economy by assisting in the promotion of diversity in agriculture, such as greenhouse development, while safeguarding agricultural land and activities from incompatible uses, which jeopardize this industry’s success.*” A review of Schedule A4 (Community of Harwich Township) shows no SCA within the study areas.

²⁵ OMAFRA, Agricultural Maps. 2019

²⁶ Dillon Consulting Limited, fieldwork,(April) 2017

²⁷ Municipality of Chatham-Kent, Official Plan, Consolidated 2018

3.2.3 Farming Infrastructure

Off-site infrastructure includes approximately 14 barns, 12 grain storage bins silos, two (2) greenhouses and one (1) horse stable. The barns are primarily used to house equipment and fruit crops.

3.2.4 Non-Agricultural Use

During field reconnaissance in the off-site study area, there was very little evidence of non-farm use. With the exception of the existing landfill site and a portion of the Chatham-Kent Municipal Airport (28.7 ha), all of the land area was in active agricultural use. There are some remnant forests/woodlots within the study area; these were not considered to be non-farm use as they have the potential to become agricultural land if cleared.

Fragmentation by roads and railway lines is typical of most rural landscapes. It should be noted that Waste Connections has purchased the section of the former Chesapeake and Ohio rail line within the landfill on-site boundary. All of the secondary rural roads within the off-site study area that were examined had low traffic volumes and no issues with accidents or safety²⁸. There are also wind turbines for electricity generation present within the off-site study area. Income from rental of land for the turbines is a significant source of income for property owners.

3.3 Haul Route

An inspection of the agricultural lands along the haul route study area found that the type of agricultural land use is very similar to that of the on-site and off-site study areas. Crops being grown include mostly soybean, corn, mixed grain, and hay. One (1) large greenhouse operation is located on Communication Road between Cundle Line and Burk Line. This family-owned operation grows hydroponic sweet peppers.

There are approximately 15 farms (identified by the presence of infrastructure buildings) and approximately 46 designated field entrances that have direct access to the haul route. However, due to the relatively flat topography of the area, most of the fields were at-grade with the road and many did not have designated field entrances. In fact, accessing many of the

²⁸ Dillon Consulting Limited, Transportation Impact Assessment Report, July 2019.

fields could be achieved at any point along the field frontage. The lack of fences and established hedgerows was also noticeable.

An inspection of the extent and condition of road-side shoulders was also made as this is where many farmers drive their equipment when travelling between sites. While it is not illegal to drive a tractor or a self-propelled implement of husbandry (SPIH) [i.e., combine or swather] on the road-side shoulder²⁹, the Ministry of Transportation, Ontario (MTO) suggests farm vehicles be driven on the travelled portion of the road because the shoulder may not be firm enough to withstand the weight of the equipment as road shoulders were not designed to accommodate agricultural traffic.

The extent and condition of road-side shoulders ranged in quality from good to poor. On Communication Road, the shoulders were wide enough to accommodate a tractor, but wider equipment such as combines or plows would still infringe upon the travelled portion of the road. In most areas, the shoulders had been graded and oiled.

²⁹ Ministry of Transportation Ontario, Farm Guide, Farm Equipment on the Highway.
www.mto.gov.on.ca/english/trucks/.../farm-guide-farm-equipment-on-the-highway.pdf accessed February 2019.

4.0 Future Environment

4.1 On-Site Study Area

It is a general policy within the Municipality of Chatham-Kent's Official Plan that the scheduled implementation of waste management facilities allows for the continued practice of agriculture on those lands in the Waste Management Area that are not yet required for waste management activities³⁰. It is Waste Connections intention to continue to allow cultivation of the farmland at the Ridge Landfill until the areas are needed for landfill development activities.

The proposed expansion of the existing waste management facility will require an Official Plan Amendment on land that is subject to the expansion area. The Amendment Area will extend from the existing Waste Management facility north to the property line, west to Charing Cross Road, south to Allison Line, and east to Erieau Road. Land in this area that is currently designated Agricultural/Agricultural Buffer and Open Space/Conservation Lands will be re-designated Waste Management Area. Two (2) woodlots located at the eastern portion of the property will remain designated Open Space/Conservation Lands.

Zoning will be amended for both existing areas and expansion areas to reflect a range of proposed waste management uses. Agriculture will also be a permitted use in the proposed landfill zoning, in accordance with the Official Plan policies.

The segment of the Howard municipal drain that currently bisects the Ridge Landfill is to be relocated within the site to allow for the expansion. No change to the off-site drainage capacity of the drain is expected as a result of the relocation.

4.2 Off-Site Study Area and Haul Route Study Area

As the EA does not propose to increase the maximum annual fill rate, and is only seeking to increase the life of the facility for an additional 20-year period, there would be no change to daily truck traffic and therefore no change is expected to current agricultural conditions as a result of the expansion in the off-site or haul route study areas.

³⁰ Chatham-Kent Official Plan, Consolidated 2018.

Very little change is expected in the off-site study area over the time period of this assessment (2021 to 2041). Upon consultation with the Municipality of Chatham-Kent, an annual background growth rate of 0.4% is projected for the rural areas of Chatham-Kent based upon housing and population growth projections (0.3% for housing and 0.1% for population). Crop types grown in Chatham-Kent are expected to remain relatively unchanged in the future.

5.0 Potential Effects on the Agricultural Environment

This section provides an analysis of potential landfill-related impacts with regard to the on-site, off-site, and haul route study areas to agricultural resources. Conclusions regarding the expected severity and significance of agricultural impacts on-site, off-site and along the haul route are discussed.

In assessing potential agricultural impacts, consideration was given to:

- Results of the work by other disciplines (socio-economic, surface water, hydrogeology, transportation, bird hazard, noise and air quality);
- A review of issues/concerns that have been raised by farmers (i.e., through farm surveys and public information sessions for the Ridge Landfill EA);
- A review of the approved Chatham-Kent Official Plan (OPA 28); and
- A visual field analysis of existing effects of off-site lands from the current Ridge Landfill site. This included observing fields adjacent to the existing landfill for signs of litter, birds, dust, odours and noise.

5.1 On-Site Effects

On-site effects relate to the loss of agricultural lands, and displacement or disruption of agricultural resources within the site boundary; as well as the number and extent of agricultural businesses impacted and number of employees at each. These are discussed below relative to the assessment criteria and indicators identified in **Table D1-1** in **Section 2.2**.

5.1.1 Area (ha) of Canada Land Inventory (CLI) Class 1-3 Lands Removed

As previously described in **Section 3.1**, the site is composed of Class 2 soils with a limitation of excess water. Class 2 soils typically have moderately severe limitations for common field crops. However, a network of tile drains has enabled farm operators to grow crops including soybeans and field corn.

In the on-site study area, 26% of the Class 2 land is presently farmed (88.07 ha out of 334 ha), planted with soybean and 6 ha is fruit production. Over the 20-year planning period of the expansion, the majority of this land will be lost which will impact the tenant operators that presently use the on-site area. This loss represents 0.04% of the total land cultivated in Chatham-Kent.

5.1.2 Changes Required to Tile Drainage/ Surface Ditches

As described in **Section 3.1.1** and shown in **FIGURE D1-3**, tile drainage was installed in the on-site area. Impacts to agricultural operations on-site should be minimal providing drain relocation (e.g. the Howard Drain) occurs in the summer or other dry periods.

5.1.3 Number and Type of Active Farm Infrastructure Impacted

Existing infrastructure within the on-site expansion area includes two (2) residential dwellings (permanently vacant) and one (1) barn on Charing Cross Road and two (2) residential dwellings and one (1) barn on Allison Line. None of these structures are actively used by either of the two (2) farmers that currently farm the land and nor are they used for other agricultural purposes. A Cultural Heritage Assessment has been completed on the structures that were identified as having heritage significance³¹.

5.1.4 Number and Extent of Agricultural Businesses Impacted and Number of Employees at Each

The agricultural lands on-site are currently used to grow agricultural crops by three (3) farm operators. None of the farm operators reside on-site. One of the tenant crop farmers has 90.7% of their farmed land base on-site and has indicated that he is looking to wind down his farming operation³². The other tenant crop farmer on-site farms other areas

³¹ Stantec Consulting Limited, *Ridge Landfill Expansion: Cultural Heritage Impact Assessment*, March 2019.

³² Dillon Consulting Limited. 2019. Interview questionnaires.

off-site and the future removal of the landfill farming area will have a small impact on the amount of land that he farms as the on-site area is relatively small. Once the fruit production area is removed for the proposed landfill expansion, the farm operator will no longer have access.

The effect associated with the removal of the agricultural lands will be confined to the on-site landfilling area. The effect will persist into the post-closure phase as the presence of the landfill will not allow those lands which were filled to be converted back to agriculture under the Municipality of Chatham-Kent Official Plan (**Appendix D9** Socio-Economic Impact Assessment Report). However, those lands on-site not used for landfilling may be able to be used for agricultural purposes after closure. Overall, the effect will be negligible as agriculture is a common employment opportunity in the region with a large land base to cultivate. The tenant farm operators have opportunities to cultivate other lands. Therefore, the potential loss of harvesting jobs and business opportunities in the area is minimal as there are 3,785 (7.8%) people employed in agriculture and over 141,639 ha (350,000 acres) of the crops harvested in Chatham-Kent.

The area being removed from agricultural activity is small and will not have a significant impact on the local agricultural industry.

This section has provided an analysis of the potential landfill-related impacts to the on-site study area, consisting of Class 3 land currently used for crop and fruit production. Given the relatively small area of land that is farmed on-site and the commitment of Waste Connection to continue to allow the on-site farm operators to use the land until it is needed for the expansion and that none of the built infrastructure on-site is used for agricultural purposes, the on-site agricultural effects will be minimal. No mitigation for agricultural purposes on-site is required.

5.2 Off-Site Effects

Off-site effects to agriculture relate to the loss or disruption of areas of crop production (e.g., common field crops/orchards/fallow) that will be removed by the facility; and the potential for impacts to cause economic losses and frustration to off-site farmers. Off-site effects also relate to the impacts to existing livestock infrastructure that are used for animal housing. These potential effects are discussed below, relative to the assessment criteria indicators identified in **Table D1-1** in **Section 2.2**.

5.2.1 Off-Site Areas of Crop Production Lost or Disrupted

There are no areas of crop production that will be lost off-site due to the proposed facility. There are areas off-site, however, which can be disrupted from a landfill operation due to effects like litter, dust, rodent and insect issues that can potentially effect agricultural operations. These effects decrease with distance away from the property boundary. The effects are generally limited to annoyance and for the most part do not cause significant harm nor cause farmers to incur economic losses.

The following describes the potential disruptive nuisance impacts to agriculture:

During high wind events, the area immediately adjacent to the working face of the landfill is defined as a "high" impact area. Litter in an agricultural context, refers to garbage such as plastic bags, newspaper or any lightweight material that can be blown from the working landfill face or from haul trucks entering the landfill facility. The main concern is the time lost in removing litter from fields during cultivation, seeding and harvesting operations, and the labour and equipment down-time due to repairing machinery that has been damaged from litter becoming jammed in moving parts. Moving litter (i.e., litter being blown by the wind) can startle farm animals, especially horses, and cause stress. The potential impacts of litter to farm-based receptor locations around the landfill are highest within 200 m of the site boundary and closest to the working face.

Based on farm interviews, the frequency of litter being observed within crop fields has increased in recent years. This is due to the change in location of the working face of the landfill being moved closer to agricultural operations and residences that are more subject to prevailing winds. Waste Connections' staff at the landfill have observed the occurrence of more frequent high wind events. Waste Connections takes this issue very seriously and is committed to preventing blowing litter to the extent possible (including permanent and temporary litter fencing), routine site perimeter and ditch inspections and subsequent cleanup up in a timely manner of litter that does blow off-site. It should be noted that from a worker health and safety perspective, clean-up operations can be delayed until weather conditions permit the work to be done safely. It was also commented by residents that Waste Connections has improved efforts in collecting blowing litter in a timelier manner, depending on field operations and weather conditions.

The noise from the landfill, associated with the daily operation of bulldozers, compactors, scrapers and haul trucks, will be mainly audible to those farms that are down-wind. As

the elevation of the potential new landfill cells advance, and the buffering capacity of the surrounding visual berms and vegetation is reduced, noise will become more audible.

It should be noted the noise generated by the landfill may be less than the peak noise levels associated with specific farm practices. While, sudden noises such as truck tailgates banging or machinery backfiring will cause a startled response in some animals, it is not expected that the noise generated from future landfill activities will have a detrimental effect on livestock as the noise levels are not anticipated to increase from current levels. The Noise Impact Assessment completed for the expansion indicates that regulatory noise criteria will not be exceeded over the life of the expansion³³.

Dust effects are associated with vehicle movements on the landfill internal roads, the soil stockpile areas and the waste fill area. The creation of dust can have a negative impact on the growth of crops in a number of ways. For example:

- Dust particles can clog the plant stomatal openings and reduce gas exchange from the leaf surface and light reaching the leaf surface, this in turn reduces photosynthesis in the plant.
- A layer of dust on the leaf surface can also impair the efficiency of pesticides from reaching their target. This is because the dust creates a protective layer for insects and mites feeding on the surface of the leaves, and pesticide sprays are not as effective.

These impacts are considered short-term, as rain and irrigation will periodically clean leaf surfaces. It should be noted that farming operations such as tillage, harvesting, and milling can also produce vast quantities of dust that can also coat adjacent crops.

Inspection of the off-site study area by field reconnaissance, found that there are fruit crops being grown within the off-site study area (apple orchard). Concerns have been expressed by local farm operators about the impact of dust on the fruit crops that are located within the off-site study area as well as the permanent roadside fruit/vegetable market located on the southeast corner of Charing Cross Road and Allison Line. In

³³ Dillon Consulting Limited, Noise Impact Assessment Report, July 2019.

response to this concern, dust impacts have been modeled for the site and monitoring of key compounds completed in conjunction with the MECP, and no concerns were identified.

A review of farm operator survey results conducted in November 2018 found that there was a concern with the existing landfill facility and the proposed expansion based on the perception of the safety of produce grown near a landfill. Another concern expressed during the survey was the amount of dust generated along Allison Line impacting the adjacent apple orchard near the landfill site. Allison Line is not and will not in the future be part of the haul route for waste, and the identified dust is not related to the landfill or landfill operations.

Based on the results of the landfill atmospheric studies (**Appendix D3 – Atmospheric Impact Assessment Report**), the impacts of dust on farm-based receptors in the vicinity of the landfill in the worst case scenario will be low.

Landfill related odours are distinctly different from farm generated odours and may illicit complaints from farm families, however, these odours do not interfere with farming activities, particularly the raising of livestock (which is also associated with strong odours). The number of landfill related odour complaints from within the study area has historically been low and with the continuation of good landfill operating practices this should not change.

In some instances, farmers may be concerned that the birds that feed on the landfill working face (e.g., gulls, starlings, crows) may leave the landfill and feed on surrounding crop lands. Birds have the potential to contaminate food crops, potentially compromising food safety and may damage market garden crops (e.g., cabbage, broccoli, green beans, etc.).

The continued management of birds on-site as part of a comprehensive bird control program is an important measure to reduce the impacts from birds.

Non-bird vectors include rats, mice, mammals and insects that may inhabit landfills, and could migrate to adjacent farms especially in the winter months (except for insects) when temperatures are colder. There are a number of concerns associated with these pests. These include:

- The loss of revenue due to the loss of stored products;

- Lower prices due to contaminated products;
- The concern of diseases being transferred from pests to livestock;
- The costs associated with controlling these pests (e.g., poisons, trapping, disposal, or fees associated with pest removal services); and
- The costs associated with repairing the feeding damage that has occurred to buildings and storage facilities.

Non-bird vectors have not been an issue associated with the Ridge Landfill in the past and should not be in the future with the expansion. The continued management of non-bird vectors on-site and the continuation of good landfill operating practices as part of a comprehensive pest control program is an important measure to reduce the impacts from non-bird vectors.

5.2.2 Number of Livestock Infrastructure within the Off-Site Study Area

This indicator was measured using roadside surveys and reviewing farm operator surveys. Based on this information, only one farm was identified as having dedicated livestock infrastructure (i.e., horse stables) within the off-site study area along Charing Cross Road. A landfill neighbour on the east side of Erieau Road also raises a small number of cows and sheep as part of his farming activities.

There are no impacts identified on these receptors from the continued operation of the landfill over the expansion period.

5.2.3 Impact on Off-Site Farm Operations

As indicated in **Section 3.1.2**, there are off-site tenants who rent fields on-site to grow agricultural crops. A review of the farm operator surveys, property ownership mapping, and conversations with the landfill operator identified that the two field crop farm operators currently rent different portions of the site and that neither farmer resides on-site. Approximately 90% of the total field crop area farmed by one of the tenant farm operators is within the landfill site and he has indicated that he is looking to wind down his farming operation³⁴.

³⁴ Dillon Consulting Limited. 2019. Interview questionnaires

The other tenant crop farm operator on the landfill site, farms other areas off-site. Future removal of the landfill farming area will have a small impact on the amount of land that he farms as the on-site area is relatively small. The orchard on-site is also relatively small. Waste Connections has committed to allowing the three (3) farmers to continue farming the on-site land until it is needed for the expansion. Overall, the area being removed from agricultural activity is small and should not have a significant impact on the local agricultural industry.

5.2.4 Summary of Off-Site Effects

This section has provided an analysis of the potential landfill-related impacts in the off-site study area. One of the main impacts is potential for litter during high wind events, creating a nuisance and disrupting agricultural operations. This can be mitigated through installation of both permanent perimeter fencing and temporary/portable fencing adjacent to the working area, along with the continuation of the diligent and timely collection of litter that has blown off-site.

Other off-site effects that have been discussed in this section have not historically been an issue at the Ridge Landfill. It is expected that diligent operating practices at the landfill will continue and not be an issue with the expansion. Overall, the off-site impacts are expected to be minimal or can be mitigated.

5.3 Haul Route Effects

The existing haul route to the site will remain unchanged, and extends from Highway 401 via Communication Road to Drury Line and then along Erieau Road to the site entrance. The following indicators were used to assess the impacts on farm operations along the haul route:

- Number of active farm building complexes with direct access to the haul route.
- Number of field entrances with direct access to the haul route.

Approximately 15 farms (identified by the presence of farm infrastructure) have direct access to the haul route. Of these 15 farms, five (5) have their main entrance on Drury Line and ten (10) are located along Communication Road.

Along the haul route there are approximately 46 field entrances with direct access to the haul route; most have good sight lines which allows the equipment operator to have a clear view of the road. A review of the farm operator surveys found farmers used Allison Line (not part of

the haul route) the most for equipment travel; but Charing Cross Road, Drury Line and Erieau Road were also frequently used.

From meetings that have been held in the past between farmers and members of the project team, some of the concerns expressed at the meetings are as follows:

- The main complaint farmers had with the existing haul route is that haul truck drivers do not always obey the speed limit, and this creates a dangerous situation when farm equipment is travelling along the side of the road or making turns into fields or driveways.
- Road shoulders in some areas are narrower with deep ditches, increasing the potential for roll-overs. Farmers were also under the impression that there would be an increase in truck traffic due to the Ridge site expansion (Note that there is no increase in truck traffic anticipated as the fill rate for the landfill is not proposed to change).
- The truck traffic was a concern in general, as many farmers believed that the current policing/enforcement program was not working and needed a revision.

Based on the information provided, and the views of farmers at the two (2) public meetings held for the EA, it would appear that general traffic safety is perceived as the major concern of the farming community. The Transportation Impact Assessment (**Appendix D11**) conducted a review of traffic safety and collision history over a 5-year period for roads that are part of the haul route and found that there were relatively few collisions; none involving waste trucks, and that no mitigation is required to address traffic safety.

Overall, traffic concerns from the farming community will continue to be addressed through dialogue between Waste Connections, the public and third-party haulers who use the landfill site. The continued effects from the operation of the landfill and associated use of the haul route to the landfill on the farming community are considered minimal.

6.0 Mitigative Measures

6.1 On-Site

There is 94 ha of land that is currently being used for agricultural purposes on the landfill site. Over the future life of the landfill this area will be removed from farming. The land is currently being cultivated by three (3) tenant farm operators, none of whom live on-site. Approximately half of the land currently farmed is being operated by a farmer looking to wind down his farming operation. Waste Connections intends to mitigate the impact of converting the farmed land to landfill by allowing the farm operations to continue until the time when the land will be used for landfill development purposes.

6.2 Off-Site

The main off-site issue identified in this assessment is the potential for blowing litter. Waste is and will continue to be covered daily, and a high perimeter fence will be installed downwind of the predominant wind direction at the working area boundary of the landfill. In addition temporary litter fences will continue to be used to control blowing litter at the active landfill face. To further reduce the potential effects of litter on adjacent farm fields, regular off-site patrols near neighbouring properties will continue to be conducted. The landfill has a litter control plan for high wind conditions and this plan will continue to be used and updated regularly by Waste Connections.

6.3 Haul Route

A number of farmers indicated safety concerns with the traffic on the haul route, however a historical review of collision data as part of the Transportation Impact Assessment work determined that farm equipment/vehicle collisions has not been an issue. The assessment also found that all roads and intersections associated with the haul route operate at an acceptable level of service. The assessment indicates that in 2041 the longest delay at an intersection along the haul route is expected to be about 15 seconds³⁵.

The mitigation recommended for waste related vehicles associated with the haul route includes the continued implementation of driver safety training and frequent reminders to drivers to obey

³⁵ Dillon Consulting Limited, *Ridge Landfill Expansion: Transportation Impact Assessment*, April 2019

the posted speed limit. While it is mandatory for farmers to attach a slow-moving vehicle sign to farm equipment and to have an escort for over-sized farm vehicles, farmers have suggested that increased police patrols of the haul route would deter speeding drivers in general, and the continued use of the Ridge Landfill's complaint handling system to focus on those drivers that continuously break the rules. Traffic safety will continue to be a significant issue to the farming community and it is recommended that on-going communication and dialogue between Waste Connections and the local farming community continue throughout the life of the expansion.

While the Ontario Farm Safety Association encourages farmers to be well trained and remain alert to ensure safe travel, the design and condition of roads and shoulders affect the safety of travel with farm equipment. Waste Connections works closely with the Municipality of Chatham-Kent's Engineering and Transportation Services Department in monitoring the condition of the haul route and rural roads adjacent to the landfill. Waste Connections' staff promptly notifies the municipality of any road condition that may require maintenance or upgrades that their drivers or site staff may observe. Waste Connections makes a substantial annual monetary contribution to the municipality to maintain the condition of the haul route which will continue through the proposed expansion period.

7.0 Conclusions

Waste Connections has undertaken an Environmental Assessment pursuant to the *Environmental Assessment Act* to expand its Ridge Landfill site in the Municipality of Chatham-Kent. This expansion is to continue to provide long-term disposal capacity to serve the growing population and economy of the province of Ontario.

The expansion would increase the lifespan of the Ridge Landfill beyond 2021 to 2041. The landfill expansion will not result in an increase in annual waste volumes disposed at the site or truck traffic to the site. Current impacts from landfill operations and truck traffic on the agricultural environment are mitigated such that there are no significant impacts or net effects. The Ridge Landfill operates year round, on a daily basis, without significant issue or complaints.

This assessment provided an analysis of the potential landfill-related impacts to the agricultural environment from the continued operation of the site until 2041. The haul route will remain the same, the landfill operations will continue in a similar method as they are today, and the number of trucks arriving at the landfill daily is not anticipated to change. For these reasons, the conclusion reached is that the effects on the agricultural environment from landfill expansion are expected to be minimal from the Ridge Landfill operations to the year 2041 and that current on-going mitigation will continue to address any impacts.

References

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- MECP. (1995) Guideline D4 Land Use On or Near Landfills and Dumps.
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This Agricultural Impact Assessment Report has been prepared based in part on information provided by Waste Connections of Canada Inc. (Waste Connections). This report is intended to provide a reasonable review of available information within an agreed work scope, schedule, and budget. This report was prepared by Dillon Consulting Limited (Dillon) for the sole benefit of Waste Connections. The material in the report reflects Dillon's judgment in light of the information available to Dillon at the time of this report preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Appendix D1-A

Table Summary of Agricultural Operations

Ridge Landfill EA
Agricultural Impact Assessment
Areas within 1 km Setback
and Haul Route

	A	B	C	D
1	Crop Name	Type		Area_ha
2	Soybean	Soybean		8.660114
3	Soybean	Soybean		6.184205
4	Apple Orchard	Orchard		6.51778
5	Soybean	Soybean		10.90602
6	Soybean	Soybean		3.807815
7	Soybean	Soybean		20.22517
8	Soybean (fallow 1 yr)	Soybean		5.545966
9	Winter wheat	Winter Wheat		3.993676
10	Corn	Corn		16.07236
11	Corn	Corn		8.69566
12	Winter Wheat	Winter Wheat		12.0388
13	Soybean with cover crop	Soybean		2.229599
14	Soybean with cover crop	Soybean		5.861271
15	Soybean	Soybean		15.39449
16	Soybean	Soybean		11.11151
17	Corn	Corn		18.00009
18	Winter Wheat	Winter Wheat		5.164042
19	Corn	Corn		19.84631
20	Soybean	Soybean		20.25347
21	Corn	Corn		23.22908
22	Fallow	Fallow		18.80674
23	Corn	Corn		15.53017
24	Soybean	Soybean		8.586036
25	Soybean	Soybean		2.2706
26	Orchard	Orchard		9.866733
27	Winter Wheat	Winter Wheat		19.02096
28	Winter Wheat	Winter Wheat		22.23263
29	Soybean	Soybean		2.895813
30	Soybean	Soybean		14.8694
31	Pasture/hay	Pasture		3.00845
32	Soybean	Soybean		8.95919
33	Pasture	Pasture		12.44786
34	Pasture	Pasture		0.654902
35	corn	Corn		15.09518
36	Wind farm	Other		15.76066
37	Fallow	Fallow		3.469765
38	Winter Wheat	Winter Wheat		11.388
39	Soybean	Soybean		18.22395
40	Corn	Corn		23.87149
41	Corn	Corn		6.617686
42	Soybean	Soybean		22.73408
43	Corn	Corn		8.181879
44	Soybean	Soybean		14.75522

Ridge Landfill EA
Agricultural Impact Assessment
Areas within 1 km Setback
and Haul Route

	A	B	C	D
1	Crop Name	Type		Area_ha
45	Soybean	Soybean		7.589639
46	Soybean	Soybean		7.584126
47	Soybean	Soybean		8.261419
48	Corn	Corn		3.49673
49	Corn	Corn		3.796787
50	Soybean	Soybean		7.724309
51	Soybean	Soybean		6.74223
52	Soybean	Soybean		2.326953
53	Soybean	Soybean		11.67098
54	Soybean	Soybean		11.5807
55	Soybean	Soybean		71.61998
56	Soybean	Soybean		17.85752
57	Winter Wheat	Winter Wheat		10.26182
58	Soybean	Soybean		11.24508
59	Winter wheat	Winter Wheat		12.94315
60	Winter Wheat	Winter Wheat		19.43573
61	Fallow	Fallow		0.241814
62	Pasture	Pasture		1.25963
63	Fallow	Fallow		3.01138
64	Winter wheat	Winter Wheat		2.702091
65	Winter wheat	Winter Wheat		9.424562
66	Winter wheat	Winter Wheat		12.59144
67	Winter wheat	Winter Wheat		4.574529
68	Winter wheat	Winter Wheat		21.12335
69	Soybean	Soybean		11.62717
70	Winter wheat	Winter Wheat		19.69379
71	Soybean	Soybean		0.559253
72	Soybean	Soybean		7.056565
73	Soybean	Soybean		4.127276
74	Soybean	Soybean		22.72169
75	Soybean	Soybean		12.14607
76	Soybean	Soybean		2.19381
77	Soybean	Soybean		4.71643
78	Soybean	Soybean		7.59222
79	Winter wheat	Winter Wheat		9.423704
80	Winter wheat	Winter Wheat		1.782603
81	Soybean with cover crop	Soybean		18.02324
82	Soybean	Soybean		24.63463
83	Soybean	Soybean		11.1187
84	Soybean	Soybean		3.1163
85	Soybean	Soybean		1.255162
86	Soybean	Soybean		2.574046
87	Soybean	Soybean		9.536481

Ridge Landfill EA
Agricultural Impact Assessment
Areas within 1 km Setback
and Haul Route

	A	B	C	D
1	Crop Name	Type		Area_ha
88	Winter wheat	Winter Wheat		6.311901
89	Winter wheat	Winter Wheat		8.071862
90	Soybean	Soybean		12.14771
91	Winter wheat	Winter Wheat		13.16142
92	Fallow	Fallow		12.59416
93	Fallow	Fallow		17.47225
94	Fallow	Fallow		4.417413
95	Winter wheat	Winter Wheat		10.78837
96	Winter wheat	Winter Wheat		12.06103
97	Corn	Corn		7.955915
98	Soybean	Soybean		20.28034
99	Soybean	Soybean		10.04811
100	Soybean	Soybean		10.42588
101	Winter wheat	Winter Wheat		20.33074
102	Winter wheat	Winter Wheat		9.434331
103	Corn/soybean	Corn		20.88378
104	Soybean	Soybean		7.266147
105	Soybean	Soybean		20.35234
106	Corn	Corn		22.81007
107	Soybean	Soybean		4.308539
108	Fallow (Corn stalks present)	Fallow		3.208638
109	Corn	Corn		3.074524
110	Corn	Corn		10.32853
111	Corn	Corn		10.98162
112	Corn	Corn		19.48719
113	Pasture	Pasture		6.270488
114	Soybean	Soybean		20.71036
115	Soybean	Soybean		20.11236
116	Corn	Corn		18.08182
117	Soybean	Soybean		9.461266
118	Soybean	Soybean		13.81515
119	Soybean with cover crop	Soybean		28.62272
120	Soybean with cover crop	Soybean		0.844904
121	Soybean	Soybean		9.922606
122	Soybean	Soybean		18.02291
123	Winter wheat	Winter Wheat		18.0776
124	Fallow	Fallow		20.21989
125	Fallow	Fallow		19.45199
126	Fallow	Fallow		12.06923
127	Corn	Corn		10.34975
128	Soybean	Soybean		7.865128
129	Corn	Corn		8.827145
130	Corn	Corn		6.613248

Ridge Landfill EA
Agricultural Impact Assessment
Areas within 1 km Setback
and Haul Route

	A	B	C	D
1	Crop Name	Type		Area_ha
131	Fallow	Fallow		9.140526
132	Corn	Corn		18.1219
133	Soybean	Soybean		20.34181
134	Corn	Corn		12.38754
135	Corn	Corn		6.538869
136	Soybean	Soybean		12.56638
137	Fallow	Fallow		13.87348
138	Soybean in 2016	Soybean		26.03952
139	Winter wheat	Winter Wheat		7.902319
140	Fallow	Fallow		24.76031
141	Fallow	Fallow		18.75249
142	Winter wheat	Winter Wheat		19.82443
143	Fallow	Fallow		7.493229
144	Fallow	Fallow		19.71669
145	Winter wheat	Winter Wheat		19.68075
146	Fallow soybean	Fallow		16.30014
147	Fallow	Fallow		22.06075
148	Fallow	Fallow		9.133963
149	Fallow	Fallow		5.989106
150	Wind turbine	Other		34.45801
151	Soybean with cover crop	Soybean		34.13436
152	Soybean (fallow 1 yr)	Soybean		16.27002
153	Soybean (fallow 1 yr)	Soybean		2.194549
154	Soybean (fallow 1 yr)	Soybean		2.433755
155	Fallow	Fallow		5.061116
156	Fallow	Fallow		1.138122
157	Corn	Corn		1.297273
158	Fallow	Fallow		10.89283
159	Soybean (fallow 1 yr)	Soybean		3.212008
160	Soybean (fallow 1 yr)	Soybean		0.362001
161	Winter wheat	Winter Wheat		7.865722
162	Fallow	Fallow		2.904228
163	Fallow	Fallow		0.933433
164	Unknown	Unknown		6.406466
165	Unknown	Unknown		0.899253
166	Unknown	Unknown		5.897525
167	Unknown	Unknown		22.89859
168	Unknown	Unknown		8.466341
169	Unknown	Unknown		6.893749
170	Unknown	Unknown		12.54781
171	Unknown	Unknown		81.26948
172	Unknown	Unknown		44.69096
173	Unknown	Unknown		4.82083

Ridge Landfill EA
Agricultural Impact Assessment
Areas within 1 km Setback
and Haul Route

	A	B	C	D
1	Crop Name	Type		Area_ha
174	Unknown	Unknown		24.44442
175	Unknown	Unknown		18.15657
176	Unknown	Unknown		7.225831
177	Unknown	Unknown		4.50614
178	Unknown	Unknown		4.529236
179	Unknown	Unknown		7.466159
180	Unknown	Unknown		13.67072
181	Unknown	Unknown		7.242912
182	Unknown	Unknown		2.76541
183	Unknown	Unknown		6.935978
184	Unknown	Unknown		12.09733
185	Unknown	Unknown		12.79894
186	Unknown	Unknown		1.311283
187	Unknown	Unknown		21.40192
188	Unknown	Unknown		4.979673
189	Unknown	Unknown		18.12509
190	Unknown	Unknown		9.229831
191	Unknown	Unknown		1.990974
192	Unknown	Unknown		8.295544
193	Unknown	Unknown		26.51109
194	Unknown	Unknown		10.79436
195	Unknown	Unknown		2.807899
196	Unknown	Unknown		7.538009
197	Unknown	Unknown		8.845051
198	Unknown	Unknown		7.643285
199	Unknown	Unknown		15.09033
200	Unknown	Unknown		7.340154
201	Unknown	Unknown		5.164403
202	Unknown	Unknown		16.77564
203	Unknown	Unknown		18.29428
204	Unknown	Unknown		0.280425
205	Unknown	Unknown		10.37912
206	Unknown	Unknown		0.937536
207	Unknown	Unknown		7.47558
208	Unknown	Unknown		6.630934
209	Unknown	Unknown		3.45917
210	Unknown	Unknown		2.879106
211	Unknown	Unknown		1.580793
212	Unknown	Unknown		1.951913